RMRS Rocky Mountain Remediation Services, L.L C
protecting the environment
Rocky Flats Environmental Technology Site
P O Box 464
Golden Colorado 80402-0464
Phone (303) 966-7000

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LAW J E		
MILLS S H		
OVERLID T W		
PATTERSON J W		
SUTTON S R		
TRICE K D		
WHEELER M		
WOLF K Z	X	
HOPKINS T A	X	X
QAEC FILE	X	X
ADMIN RECORD	X	X
RMRS RECORDS	X	X
TRAFFIC		
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CLASSIFICATION		
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CONFIDENTIAL		
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Date		
IN REPLY TO RF CC NO		
ACTION ITEM STATUS q PARTIAL/OPEN q CLOSED		
LTR APPROVALS		
ORIG & TYPIST INITIALS DLH dlu		
RF-46469(Rev 1/98)		

June 1, 1998

Randy Leitner, Program Manager
Compliance & Performance Assurance
Kaiser-Hill Company, L L C
Building T130C

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CERTIFICATION OF CLOSURE FOR THE COMPONENTS OF RCRA UNIT 40 IN BUILDING 123 - TAH-002-98

Rocky Mountain Remediation Services, L L C , (RMRS) is submitting the attached Certification of Closure for the Building 123 Components of RCRA Unit 40 Closure activities were performed as part of the Building 123 Decommissioning Project All closure activities were conducted in accordance with the applicable requirements for interim status units defined in 6 CCR 1007-3, Part 265, and the Closure Plan for Building 123 Components of RCRA Unit 40, November 1997, (Closure Plan) The Closure Plan was approved by the Colorado Department of Health and Environment (CDPHE) on January 8, 1998

Closure activities included the following

1) Removing above ground process waste lines and ancillary equipment, and disposing of them as listed mixed waste

2) Decontaminating sumps, pipe chases, and underground process waste lines

As stated in Section 5 0 of the attached report, closure requirements were achieved for the above ground piping and ancillary equipment, and the sumps and pipe chases in Rooms 156, 157, and 158 The sump in Room 125 and the underground piping did not meet closure performance standards Remediation of the sump in Room 125 and the underground piping will be deferred to environmental restoration activities for IHSS 121, 148 and the building slab Data from soil samples, from groundwater monitoring, and from rinsate analysis from the sump and piping will be evaluated to rank the IHSSs and to determine what, if any, remediation will be required for this area As required by the regulations and the Closure Plan, closure activities were evaluated and certified by an independent, Colorado-registered professional engineer

1/80

Please transmit this certification report to CDPHE at your earliest convenience A draft transmittal letter is attached for your use If you have questions, please contact me at 966-7652, or Dorthea Hoyt at 966- 6742

Ted A. Hopkins

Ted A Hopkins Manager
Environmental Compliance

DLH dlu

Attachments
As Stated

cc w/attachments

K A Dorr
K North

DRAFT **DRAFT** **DRAFT**

June xx, 1998

Mr Joe Schieffelin, Unit Leader
Hazardous Waste Monitoring and Enforcement
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80222-1530

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CERTIFICATION OF CLOSURE FOR THE COMPONENTS OF RCRA UNIT 40 IN BUILDING 123 - KSN-xxx-98

Dear Mr Schieffelin

The U S Department of Energy, Rocky Flats Field Office (DOE, RFFO) and Kaiser-Hill L L C are submitting the enclosed Certification of Closure for the Building 123 Components of RCRA Unit 40 Closure activities were performed as part of the Building 123 Decommissioning Project All closure activities were conducted in accordance with the applicable requirements for interim status units defined in 6 CCR 1007-3, Park 265, and the Closure Plan for Building 123 Components of RCRA Unit 40, November 1997, (Closure Plan) The Closure Plan was approved by the Colorado Department of Health and Environment (CDPHE) on January 8, 1998

Closure activities included the following

1) Removing above ground process waste lines and ancillary equipment, and disposing of them as listed mixed waste

2) Decontaminating sumps, pipe chases, and underground process waste lines

As stated in Section 5 0 of the attached report, closure requirements were achieved for the above ground piping and ancillary equipment, and the sumps and pipe chases in Rooms 156, 157, and 158 The sump in Room 125 and the underground piping did not meet closure performance standards Remediation of the sump in Room 125 and the underground piping will be deferred to environmental restoration activities for IHSS 121, 148 and the building slab Data from soil samples, from groundwater monitoring, and from rinsate analysis from the sump and piping will be evaluated to rank the IHSSs, the under building contamination (UBC), and to determine what, if any, remediation will be required for this area As required by the regulations and the Closure Plan, closure activities were evaluated and certified by an independent, Colorado-registered professional engineer

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Please transmit this certification report to CDPHE at your earliest convenience A draft transmittal letter is attached for your use If you have questions, please contact Randy Leitner at 966- 3537

Robert April, Group Lead
Stakeholder & Environmental Liaison
DOE, RFFO

Karan North, Division Manager
Environmental Manager & Compliance
Kaiser-Hill Company, L L C

CERTIFICATION OF CLOSURE FOR THE BUILDING 123 COMPONENTS OF RCRA UNIT 40

Prepared By
Rocky Mountain Remediation Services, L L C

Certified By
Dennis Pontius, P E , EnviroTemps, Inc

CERTIFICATION OF CLOSURE
FOR THE BUILDING 123 COMPONENTS OF
RCRA UNIT 40

REVISION 0

MAY 1998

CERTIFICATION OF CLOSURE
FOR THE BUILDING 123 COMPONENTS OF RCRA UNIT 40

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APPENDICES

Appendix A - Floor Plan of RCRA Unit 40 piping in Building 123
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1 0 EXECUTIVE SUMMARY

RCRA Unit 40 in Building 123 is an interim status unit Closure was done in accordance with the Closure Plan for Building 123 Components of RCRA Unit 40, November 1997 (Closure Plan) and the requirements of the Colorado Hazardous Waste Regulations, 6 CCR 1007-3, Part 265

All above-ground components of RCRA Unit 40 in Building 123 were removed and managed as RCRA listed mixed waste in accordance with Option 2 of the Closure Plan This waste will be sent to an approved Treatment Storage and Disposal Facility (TSDF) for disposition

Closure of the pipe chases and sumps in Room 156 and 158 was done in accordance with Option 1 (decontamination) of the Closure Plan Analytical testing confirmed that these components met RCRA Clean Closure Standards

Closure of the pipe chases and sump in Room 157 was also done accordance with Option 1 of the Closure Plan Analytical testing showed that nickel was present at 111 ppb which is 11 ppb above the Tier 2 standard Since nickel is not identified as a contaminant of concern nor is it a RCRA regulated hazardous waste, CDPHE has determined that no further action will be required for Sump 157

Closure of the sump in Room 125 and the underground piping did not meet the Closure Performance Standards The rinsate sample for Room 125 exceeded standards for lead and rinsate sample for the underground piping exceeded standards for chromium and lead Remediation of the Room 125 sump and the underground piping will be deferred to the Environmental Restoration (ER) Department ER will evaluate data from soil samples, groundwater monitoring, and the rinsate analysis to rank Individual Hazardous Substance Sites (IHSS's) 121, 148, and the under building contamination (UBC) associated with Building 123 This evaluation will determine what, if any, remediation will be required for these areas

2 0 INTRODUCTION

The purpose of this report is to verify completion of RCRA Closure operations and to certify closure of the Building 123 components of RCRA Unit 40 that have met RCRA clean closure standards

RCRA Unit 40 is the site-wide network of tanks, pipelines, and sumps, constructed to transport and temporarily store process waste from the point of origin to on-site treatment and discharge points The Building 123 component of RCRA Unit 40 consisted of regulated process waste lines (above and below grade), sumps, and pump stations This process waste system was used to transport laboratory wastes generated in Building 123, to Building 374 for treatment

Closure of RCRA Unit 40 in Building 123 (an interim status unit) was done in accordance with the Closure Plan for Building 123 Components of RCRA Unit 40, November 1997 (Closure Plan) and the requirements of the Colorado Hazardous Waste Regulations, 6 CCR 1007-3, Part 265 The Closure Plan was approved by the Colorado Department of Public Health and Environment (CDPHE) on January 8, 1998 Partial closure of RCRA Unit 40 was an element of a larger project to decommission Buildings 123, 113, 114, and 123S This project was conducted as an accelerated remedial action approved under the Building 123 Proposed Action Memorandum (PAM) The PAM is a decision document for the decommissioning of Building 123 and was approved by CDPHE on August 25, 1997

Rocky Mountain Remediation Services, L L C , retained an independent Professional Engineer from EnviroTemps (ET) to witness the closure activities and perform this certification This report provides evidence to support the closure determinations by the Owner/Operator and verification by an independent Professional Engineer (PE), as required by 6 CCR 1007-3, Section 265 115, for RCRA closure of an

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interim status unit

3 0 HISTORICAL OVERVIEW AND WASTE CHARACTERIZATION

Building 123 was constructed in 1953 and was used as an analytical laboratory, dosimetry, and instrument calibration facility The building also was used for medical research, storage for all radiological health records, office space for radiation health specialists, and a laboratory for calibration of criticality alarms The process waste system in Building 123 was used from 1953 through 1997 when the building was decommissioned

The building was modified several times through its operation The process waste system was modified in 1968 when a extension to the east wing was built, in 1972 when the west wing was added to the building, in 1974 when portions of the above-ground piping were installed and old underground lines were grouted, in 1989 when the underground line to Valve Vault 18 was replaced, and finally in 1995 when various upgrades were made to the above-ground piping A detailed description of the history of the process system in Building 123 can be found in the Closure Plan

The process waste system incorporated into RCRA Unit 40 included the system components in Rooms 103, 103A, 105, 111, 112, 113B, 121, 123, 123A, 125, 126C, 127, 155, 155B, 156, 157, and 158, the active underground line (double walled pipe) between Room 158, Valve Vault 18, and Tank D-853 in Building 428, sumps in Rooms 125, 156, 157, and 158, and pipe chases in Room 156, 157, and 158

The Closure Plan describes the waste streams which were disposed of in the Building 123 component of RCRA Unit 40, and also provides a list of EPA waste codes used in the building

4 0 CLOSURE CERTIFICATION ACTIVITIES

4.1 BUILDING 123 RCRA CLOSURE TEAM

Closure activities were conducted in February and March 1998 by Resource Technologies Group (RTG) under subcontract to Denver West Remediation and Construction (DWRC) and Kaiser-Hill RMRS provided management and technical support of the Building 123 Decommissioning project for Kaiser-Hill As stated above, RMRS subcontracted independent Professional Engineering services from EnviroTemps

4 2 CLOSURE OPTIONS

The Closure Plan listed three options for closure of RCRA Unit 40 in Building 123 which are summarized below Details may be found in the Closure Plan and in the Construction Package for Building 123 Strip-Out

Option 1 - Decontamination using a solution capable of removing the contaminates of concern and testing the final rinsate to verify treatment standards according to the Rocky Flats Environmental Technology Site (RFETS) RCRA Permit, Part 10, Closure, Section C, "Clean Closure by Decontamination"

Option 2 - Manage as RCRA mixed waste with no on-site treatment

Option 3 - Debris treatment as defined by RFETS RCRA Permit, Part 10, Closure, Section D, "Debris Rule Decontamination"

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4 3 BUILDING 123 CLOSURE ACTIVITIES

RCRA Unit 40 in Building 123 was divided into three major components for closure

Above-ground system components All above-ground process waste piping (steel and PVC), pumps, and polyethylene pump containments were managed under Option 2 These system components were stripped-out and packaged in waste crates as low level mixed waste for subsequent disposal at an approved and permitted Treatment Storage and Disposal Facility (TSDF)

Pipe chases and sumps The pipe chases and sumps were managed under Option 1 First the pipe chases and sumps were washed with a solution of trisodium phosphate and sodium carbonate The volume of solution used was approximately 3 times the volume of the chases and sumps The chases and sumps were then liberally rinsed with water Finally, a specified volume of water which did not exceed 5% the capacity of each pipe chase and sump was used as a final rinse Composite samples of the rinsate were collected for analysis Three composite samples were collected one for each sump and associated pipe chases in Room 156, 157, and 158 A separate sample was collected for the sump in Room 125 (Room 125 does not have any pipe chases) All waste generated during the pipe chase and sump closure activities was routed to the process waste system downstream of the closure activities (Building 374) or packaged as a listed mixed waste

Underground piping The underground piping was managed under Option 1 This piping begins in Room 158, where the process waste system exits Building 123 It drains to Valve Vault 18, passes through Valve Vaults 17 and 16, and discharges to Tank D-853 in Building 428 This entire stretch of piping was washed with a solution of trisodium phosphate and sodium carbonate The volume of solution used was approximately 3 times the volume of the piping and the D-853 tank The piping was then liberally rinsed with water Finally, a specified volume of water which did not exceed 5% the capacity of the piping and Tank D-853, was used as a final rinse A sample of the rinsate was collected from the D-853 tank for analysis

5.0 COMPARISON OF SAMPLE RESULTS TO CLOSURE PERFORMANCE STANDARDS

5 1 SUMMARY OF CLOSURE PERFORMANCE STANDARDS

The Closure Performance Standards are defined in the Closure Plan A summary of the Closure Performance Standards is provided below

Option 1, Decontamination,

1 An appropriate solution must be used for decontamination

2 The system must be flushed with the decontamination solution to remove trace amounts of acids or bases

3 Rinsate samples must be evaluated against the final rinsate closure performance standards from the Rocky Flats Cleanup Agreement (RFCA) Permit, Part X

4 The final rinsate volume must not exceed 5% of the capacity of the system

5 All visible waste residuals must be removed

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6 The final rinsate concentrations of priority pollutants and heavy metals must be below the Tier 2 action levels as defined in Attachment 5 of RFCA

7 The pH of the rinsate must be between 6 and 9

Option 2. Dispose as Mixed Waste

1 Waste generated must be managed as RCRA mixed waste with EPA Waste Codes of F001, F002, and F005

2 The waste generated must be managed in accordance with applicable state and federal regulations

Option 3. Debris Treatment

Since Option 3 was not used during the closure of RCRA Unit 40 in Building 123, the Closure Performance Standards will not be summarized

5 2 COMPARISON OF CLOSURE ACTIVITIES WITH THE PERFORMANCE STANDARDS

The following is a comparison of each major component of RCRA Unit 40 in Building 123 to the Closure Performance Standards This comparison demonstrates whether the unit may be closed Tables summarizing all the sample analytical results may be found in Appendix A

5.2.1 Above-ground system components.

1 All above-ground process waste piping and ancillary equipment was packaged as mixed waste with the waste code F001, F002 and F005

2 Since the above-ground piping was handled according to Option 2 (managed as a hazardous waste) it was sampled for Land Disposal Restriction (LDR) standards according to 40 CFR 268 40 and 268 48 Samples of both the PVC and the steel pipe were collected All pipe was determined to comply with the LDR standards

Conclusion. The above-ground components of RCRA Unit 40 met the Closure Performance Standards Waste generated has been managed as RCRA mixed waste with EPA Waste Codes of F001, F002, and F005, and the packaged waste is being managed in accordance with RFETS procedures, which meet applicable state and federal regulations for on-site storage at a TSDF

5 2 2 Pipe Chases and Sump in Room 156

1 A solution of trisodium phosphate/sodium carbonate was used for decontamination

2 The pipe chases and the sump in Room 156 were adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan

3 The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X The comparison can be found in Appendix B

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4 The final rinsate volume used in the pipe chases did not exceed 6 pints The final rinsate volume used in the sump did not exceed 25 gallons These volumes are less than 5% of the capacity of the components

5 All visible waste residuals were removed during washing and rinsing of the sump The pipe chases were not visible

6 No contaminants were found to exceed Tier 2 Action levels As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA

7 All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374

Conclusion: Closure of the pipe chases and sump in Room 156 meet the Closure Performance Standards

5 2.3 Pipe Chases and Sump in Room 157

1 A solution of trisodium phosphate/sodium carbonate was used for decontamination

2 The pipe chases and the sump in Room 157 were adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan

3 The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X The comparison can be found in Appendix B

4 The final rinsate volume used in the pipe chases did not exceed 19 5 pints The final rinsate volume used in the sump did not exceed 44 gallons These volumes are less than 5% of the capacity of the components

5 All visible waste residuals were removed during washing and rinsing of the sump The pipe chases were not visible

6 As shown in Appendix B, no contaminants of concern were found to exceed Tier 2 action levels Nickel was present at 111 ppb which is 11 ppb above the Tier 2 standard Since nickel is not identified as a contaminant of concern, nor is it a RCRA regulated hazardous waste, CDPHE has determined that no further action will be required for the sump in Room 157 (documented in correspondence between K-H and CDPHE dated April 3, 1998)

7 All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374

Conclusion: Closure of the pipe chases and sump in Room 157 meet the Closure Performance Standards

5 2.4 Pipe Chases and Sump in Room 158

1 A solution of trisodium phosphate/sodium carbonate was used for decontamination

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2 The pipe chases and the sump in Room 158 were adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan

3 The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X The comparison can be found in Appendix B

4 The final rinsate volume used in the pipe chases did not exceed 10 5 pints The final rinsate volume used in the sump did not exceed 31 gallons These volumes are less than 5% of the capacity of the components

5 All visible waste residuals were removed during washing and rinsing of the sump The pipe chases were not visible

6 No contaminants were found to exceed Tier 2 Action levels As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA

7 All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374

Conclusion. Closure of the pipe chases and sump in Room 158 meet the Closure Performance Standards

5 2.5 Sump in Room 125

1 A solution of trisodium phosphate/sodium carbonate was used for decontamination

2 The sump in Room 125 was adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan

3 The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X The comparison can be found in Appendix B

4 The final rinsate volume used in the sump did not exceed 2 gallons This volume is less than 5% of the capacity of the sump

5 All visible waste residuals were removed during washing and rinsing of the sump

6 As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA, except for lead The rinsate concentration for lead was 56 ppb and the action level for lead is 15 ppb

7 All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374

Conclusion· Closure of the sump in Room 125 did not meet the Closure Performance Standards Remediation of this sump will be deferred to the Environmental Restoration (ER) Department ER will evaluate data from soil samples, groundwater monitoring, and the rinsate analysis to rank Individual Hazardous Substance Sites (IHSS's) 121, 148 and

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the under building contamination (UBC) associated with Building 123 This evaluation will determine what, if any, remediation will be required for this area

5.2 6 Underground Pipe from Room 158, Building 123 to Tank D853 in Building 428

1 A solution of trisodium phosphate/sodium carbonate was used for decontamination

2 The piping was adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan

3 The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X The comparison can be found in Appendix B

4 The final rinsate volume used in the piping and tank did not exceed 113 gallons This volume is less than 5% of the capacity of the piping and Tank D853

5 The piping is underground and therefore not visible for inspection

6 As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA, except for chromium and lead The analysis of the rinsate revealed 588 ppb chromium and 21 7 ppb lead remained within the underground portion of the line The action level of chromium is 100 ppb, and the action level for lead is 15 ppb

7 All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374

Conclusion: Closure of the underground piping did not meet the Closure Performance Standards Remediation of the underground piping will be deferred to the Environmental Restoration (ER) Department ER will evaluate data from soil samples, groundwater monitoring, and the rinsate analysis to rank Individual Hazardous Substance Sites (IHSS's) 121, 148 and the under building contamination (UBC) associated with Building 123 This evaluation will determine what, if any, remediation will be required for this area

6 0 CONCLUSION AND CLOSURE CERTIFICATION

Based upon observations and investigations presented in this report, the Closure Performance Standards stated in Section 5 0 of this report are accurate

The undersigned hereby certifies the following

1 The following components of RCRA Unit 40 in Building 123 at the Rocky Flats Environmental Technology Site met RCRA Clean Closure standards prescribed in the Closure Plan and meet the requirement of the Colorado Hazardous Waste Act (CHWA) regulations for RCRA closure under interim status, as defined in 6 CCR 1007-3, Section 265, Subpart G

- all above-ground piping, removable ancillary equipment and secondary containment
- sumps and pipe chases in Rooms 156, 157 and 158

2 The following components of RCRA Unit 40 in Building 123 will be deferred to ER for ranking and future remediation as applicable

- the Sump in Room 125 (due to 56 ppb Pb)
- the underground pipe from Building 123 to Building 428 (due to 588 ppb Cr and 21 7 ppb Pb)

Professional Engineer

5-28-98
Date

Dennis W Pontius, P E
EnviroTemps, Inc
555 Zang Street
Suite 104
Lakewood, CO 80228

COLORADO REGISTERED DENNIS W PONTIUS 31028 PROFESSIONAL ENGINEER

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7 0 REFERENCES

Closure Plan for Building 123 Components of RCRA Unit 40 (Closure Plan), Revision 0, November 1997

Construction Package for Building 123 Strip-Out, Revision 14, February 27, 1998

Proposed Action Memorandum for the Decommissioning of Building 123 (PAM), Revision 6, dated March 26, 1998

Waste Management Plan for Building 123, Revision 1, dated March 1998

Appendix A - Floor Plan of RCRA Unit 40 piping in Building 123

Appendix B - Analytical Results

Appendix B - Analytical Results for the Sumps and Pipe Chases in Rooms 156, 157, and 158

Sample from rinsate from B123, Sump 156
SUMP 156
Sample # 98A0996-001

Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	Is the contaminant a "Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
1,1 Dichloroethylene	0 5U	7 00E-03	7 ppb	NO	YES
1,1,2-Trichloroethane	0 5U	5 00E-03	5 ppb	NO	YES
1-1-1-Trichloroethane	0 5U	2 00E-01	200 ppb	NO	YES
1-2-Dichloroethane	0 5U	5 00E-03	5 ppb	NO	YES
2-Butanone (Methyl ethyl ketone)	2 U	2 47E+00	2470 ppb	NO	YES
Acetone	2 U	3 65E+00	3650 ppb	NO	YES
Aluminum, Al	137 Total	1 06E+02	106,000 ppb	NO	NO
Antimony, Sb	3 1 Total	6 00E-03	6 ppb	NO	NO
Arsenic, As	1 6 U Total	5 00E-02	50 ppb	NO	YES
Barium, Ba	21 9 Total	2 00E+00	2,000 ppb	NO	YES
Benzene	0 5 U	5 00E-03	5 ppb	NO	YES
Beryllium, Be	0 2 U Total	4 00E-03	4 ppb	NO	NO
Bromodichloromethane	5 Baseline Contaminant	1 00E-01	100 ppb	NO	NO
Cadmium, Cd	0 4 U Total	5 00E-03	5 ppb	NO	YES
Carbon disulfide	2 0 U	2 76E-02	27 6 ppb	NO	YES
Carbon tetrachloride	0 5U	5 00E-03	5 ppb	NO	YES
Chlorobenzene	0 5U	1 00E-01	100 ppb	NO	YES
Chloroform	38 E Baseline contaminant	1 00E-01	100 ppb	NO	YES
Chromium, Cr	0 51 Total	1 00E-01	100 ppb	NO	YES
Cobalt, Co	0 50 U Total	2 19E+00	2,190 ppb	NO	NO
Copper, Cu	0 70 U Total	1 30E+00	1,300 ppb	NO	NO
Ethylbenzene	0 5U	7 00E-01	700 ppb	NO	YES
Iron, Fe	59 7 Total	NA, not on Tier 2 Table	NA	NO	NO

Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	Is the contaminant a "Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
Lead, Pb	4 0 Total	Not found in RFCA Tier 2 Table	NA	The MCL for lead is 15 ppb	YES? Under the Safe Drinking Water Act, 15 ppb is the MCL for lead
Lithium, Li	4 7 Total	7 30E+01	73,000 ppb	NO	NO
Magnesium, Mg	3200 Total	Not found in RFCA Tier 2 Table	NA	NO	NO
Manganese Mn	2 0 Total	1 83E-01	183 ppb	NO	NO
Mercury, Hg	0 10 Total	2 00E-03	2 ppb	NO	YES
Methylene chloride	0 5U	5 00E-03	5 ppb	NO	YES
Molybdenum Mo	21 5 Total	1 83E-01	183 ppb	NO	NO
Nickel Ni	0 60 U Total	1 00E-01	100 ppb	NO	NO
Potassium, K	1 000 Total	Not found in the RFCA Tier 2 Table	NA	NO	NO
Pyridine	70 U	Not on Tier 2 List	NA	Not on Tier 2 list	YES
Selenium Se	1 8 U Total	5 00E-02	50 ppb	NO	YES
Silver Ag	10 U Total	1 83E-01	183 ppb	NO	YES
Sodium	7 510 Total	Not found in RFCA Tier 2 Table	NA	NO	NO
Strontium Sr	114 Total	2 19E+01	21,900 ppb	NO	NO
Tetrachloroethylene	0 5 U	5 00E-03	5 ppb	NO	YES
Thallium, Tl	2 3 U Total	2 00E-03	2 ppb	NO	NO
Tin, Sn	10 4 Total	2 19E+01	21,900 ppb	NO	NO
Toluene	0 5U	1 00E+00	1000 ppb	NO	YES
Trichloroethylene	0 5U	5 00E-03	5 ppb	NO	YES
Vanadium, V	0 6U Total	2 56E-01	256 ppb	NO	NO
Vinyl chloride	0 5U	2 00E-03	2 ppb	NO	YES
Xylenes	0 5U	1 00E+01	10,000 ppb	NO	YES
Zinc, Zn	9 6 Total	1 10E+01	11,000 ppb	NO	NO

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SUMP 156
Sample Report Date 2/24 98
Summarized Tuesday March 24 1998
Ted A Hopkins

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Sample from rinsate from B123, Sump 157
SUMP 157
Sample # 98A0996-002 Metals 98A0996-002 012

Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	Is the contaminant a "Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
1,1 Dichloroethylene	0 5U	7 00E-03	7 ppb	NO	YES
1,1,2-Trichloroethane	0 5U	5 00E-03	5 ppb	NO	YES
1-1-1-Trichloroethane	0 5U	2 00E-01	200 ppb	NO	YES
1-2-Dichloroethane	0 5U	5 00E-03	5 ppb	NO	YES
2-Butanone (Methyl ethyl ketone)	2 U	2 47E+00	2470 ppb	NO	YES
Acetone	2 U	3 65E+00	3650 ppb	NO	YES
Aluminum Al	138 Total	1 06E+02	106,000 ppb	NO	NO
Antimony Sb	1 4 U Total	6 00E-03	6 ppb	NO	NO
Arsenic As	1 6 U Total	5 00E-02	50 ppb	NO	YES
Barium, Ba	21 9 Total	2 00E+00	2,000 ppb	NO	YES
Benzene	0 5 U	5 00E-03	5 ppb	NO	YES
Beryllium Be	0 2 U Total	4 00E-03	4 ppb	NO	NO
Bromodichloromethane	5 Baseline Contaminant	1 00E-01	100 ppb	NO	NO
Cadmium, Cd	3 1 Total	5 00E-03	5 ppb	NO	YES
Carbon disulfide	2 0 U	2 76E-02	27 6 ppb	NO	YES
Carbon tetrachloride	0 5U	5 00E-03	5 ppb	NO	YES
Chlorobenzene	0 5U	1 00E-01	100 ppb	NO	YES
Chloroform	26 Baseline contaminant	1 00E-01	100 ppb	NO	YES
Chromium, Cr	13 2 Total	1 00E-01	100 ppb	NO	YES
Cobalt, Co	0 50 U Total	2 19E+00	2,190 ppb	NO	NO
Copper, Cu	4 8 Total	1 30E+00	1,300 ppb	NO	NO
Dibromochloromethane	0 7				
Ethylbenzene	0 5U	7 00E-01	700 ppb	NO	YES
Iron, Fe	152 Total	NA, not on Tier 2 Table	NA	NO	NO

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SUMP 157
Sample Report Date 2 25 98
Summarized Tuesday March 24 1998
Ted A Hopkins

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Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	Is the contaminant a "Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
Lead, Pb	4 1 Total	Not found in RFCA Tier 2 Table	NA	The MCL for lead is 15 ppb	YES? Under the Safe Drinking Water Act, 15 ppb is the MCL for lead
Lithium Li	4 2 Total	7 30E+01	73 000 ppb	NO	NO
Magnesium Mg	3090 Total	Not found in RFCA Tier 2 Table	NA	NO	NO
Manganese Mn	19 0 Total	1 83E-01	183 ppb	NO	NO
Mercury Hg	0 10 U Total	2 00E-03	2 ppb	NO	YES
Methylene chloride	0 5U	5 00E-03	5 ppb	NO	YES
Molybdenum Mo	21 5 Total	1 83E-01	183 ppb	NO	NO
Nickel, Ni	111 Total	1 00E-01	100 ppb	NO	NO
Potassium, K	1,010 Total	Not found in the RFCA Tier 2 Table	NA	NO	NO
Pyridine	70 U	Not on Tier 2 List	NA	Not on Tier 2 list	YES
Selenium Se	1 8 U Total	5 00E-02	50 ppb	NO	YES
Silver Ag	10 U Total	1 83E-01	183 ppb	NO	YES
Sodium	7 920 Total	Not found in RFCA Tier 2 Table	NA	NO	NO
Strontium Sr	109 Total	2 19E+01	21,900 ppb	NO	NO
Tetrachloroethylene	0 5 U	5 00E-03	5 ppb	NO	YES
Thallium Tl	2 3 U Total	2 00E-03	2 ppb	NO	NO
Tin Sn	1 7 U Total	2 19E+01	21,900 ppb	NO	NO
Toluene	0 5U	1 00E+00	1000 ppb	NO	YES
Trichloroethylene	0 5U	5 00E-03	5 ppb	NO	YES
Vanadium, V	0 6U Total	2 56E-01	256 ppb	NO	NO
Vinyl chloride	0 5U	2 00E-03	2 ppb	NO	YES
Xylenes	0 5U	1 00E+01	10,000 ppb	NO	YES
Zinc Zn	14 1 Total	1 10E+01	11,000 ppb	NO	NO

SUMP 157
Sample Report Date 2 25 98
Summarized Tuesday March 24 1998
Ted A Hopkins

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Sample from rinsate from B123 Sump 158
SUMP 158
Sample # 98A0996-003 Metals 98A0996-003 018

Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	Is the contaminant a "Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
1,1 Dichloroethylene	0 5U	7 00E-03	7 ppb	NO	YES
1 1 2-Trichloroethane	0 5U	5 00E-03	5 ppb	NO	YES
1-1-1-Trichloroethane	0 5U	2 00E-01	200 ppb	NO	YES
1-2-Dichloroethane	0 5U	5 00E-03	5 ppb	NO	YES
2-Butanone (Methyl ethyl ketone)	2 U	2 47E+00	2470 ppb	NO	YES
Acetone	2 U	3 65E+00	3650 ppb	NO	YES
Aluminum Al	135Total	1 06E+02	106 000 ppb	NO	NO
Antimony Sb	1 4 U Total	6 00E-03	6 ppb	NO	NO
Arsenic As	1 6 U Total	5 00E-02	50 ppb	NO	YES
Barium Ba	20 6 Total	2 00E+00	2 000 ppb	NO	YES
Benzene	0 5 U	5 00E-03	5 ppb	NO	YES
Beryllium Be	0 2 U Total	4 00E-03	4 ppb	NO	NO
Bromodichloromethane	6 Baseline Contaminant	1 00E-01	100 ppb	NO	NO
Cadmium Cd	0 4 U Total	5 00E-03	5 ppb	NO	YES
Carbon disulfide	2 0 U	2 76E-02	27 6 ppb	NO	YES
Carbon tetrachloride	0 5U	5 00E-03	5 ppb	NO	YES
Chlorobenzene	0 5U	1 00E-01	100 ppb	NO	YES
Chloroform	44 Baseline contaminant	1 00E-01	100 ppb	NO	YES
Chromium Cr	1 1 Total	1 00E-01	100 ppb	NO	YES
Cobalt Co	0 50 U Total	2 19E+00	2,190 ppb	NO	NO
Copper Cu	0 70 U Total	1 30E+00	1,300 ppb	NO	NO
Dibromochloromethane	0 7				
Ethylbenzene	0 5U	7 00E-01	700 ppb	NO	YES
Iron, Fe	79 3 Total	NA, not on Tier 2 Table	NA	NO	NO

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Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	Is the contaminant a "Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
Lead Pb	2 4 Total	Not found in RFCA Tier 2 Table	NA	The MCL for lead is 15 ppb	YES? Under the Safe Drinking Water Act, 15 ppb is the MCL for lead
Lithium Li	5 6 Total	7 30E+01	73 000 ppb	NO	NO
Magnesium Mg	3030 Total	Not found in RFCA Tier 2 Table	NA	NO	NO
Manganese Mn	1 6 Total	1 83E-01	183 ppb	NO	NO
Mercury Hg	0 10 U Total	2 00E-03	2 ppb	NO	YES
Methylene chloride	0 5U	5 00E-03	5 ppb	NO	YES
Molybdenum Mo	20 5 Total	1 83E-01	183 ppb	NO	NO
Nickel Ni	0 60 U Total	1 00E-01	100 ppb	NO	NO
Potassium K	1 030 Total	Not found in the RFCA Tier 2 Table	NA	NO	NO
Pyridine	70 U	Not on Tier 2 List	NA	Not on Tier 2 list	YES
Selenium, Se	1 8 U Total	5 00E-02	50 ppb	NO	YES
Silver Ag	10 U Total	1 83E-01	183 ppb	NO	YES
Sodium	7,490 Total	Not found in RFCA Tier 2 Table	NA	NO	NO
Strontium, Sr	107 Total	2 19E+01	21 900 ppb	NO	NO
Tetrachloroethylene	0 5 U	5 00E-03	5 ppb	NO	YES
Thallium, Tl	2 3 U Total	2 00E-03	2 ppb	NO	NO
Tin, Sn	4 7 Total	2 19E+01	21,900 ppb	NO	NO
Toluene	0 8	1 00E+00	1000 ppb	NO	YES
Trichloroethylene	0 5U	5 00E-03	5 ppb	NO	YES
Vanadium V	0 6U Total	2 56E-01	256 ppb	NO	NO
Vinyl chloride	0 5U	2 00E-03	2 ppb	NO	YES
Xylenes	0 7	1 00E+01	10,000 ppb	NO	YES
Zinc, Zn	4 3 Total	1 10E+01	11,000 ppb	NO	NO

APO SAMPLE RECEIPT

This sample receipt is supplied to waste generators as notification of sample collection Inquiries into the status of this sample may be directed to the Analytical Projects Office (APO) by calling 966-2403, 966-7789, or 966-3771 The APO references samples by the following identification numbers

RIN	**98A0996**	Waste Stream ID	123-0-0
APO Event	98A0996-001	Customer Sample ID	SUMP 156
Duplicate ID		Field Blank ID	
Issue Date	02/03/98	Equipment Blank ID	
		Trip Blank ID	

Sample Description FINAL RCRA RINSATE FROM 123
Other Id
Sample Location BLDG 123, ROOM 156

Analyses Requested:	**Bottle ID**
AQUEOUS RADSCREEN - DOT	98A0996-001 001
GROSS ALPHA/BETA - NO RAD ADDED (WASTE)	98A0996-001 001
FINGERPRINT (559)	98A0996-001 002
SW-846 8260 (Water, Aqueous Waste)	98A0996-001 003
SW-846 8260 (Water, Aqueous Waste)	98A0996-001 004
SW-846 8270B (TCLP Extracts)	98A0996-001 005
TOTAL METALS SW-846 (HG)	98A0996-001 006
AQUEOUS RADSCREEN - DOT	98A0996-002 007
GROSS ALPHA/BETA - NO RAD ADDED (WASTE)	98A0996-002 007
FINGERPRINT (559)	98A0996-002 008
SW-846 8260 (Water, Aqueous Waste)	98A0996-002 009
SW-846 8260 (Water, Aqueous Waste)	98A0996-002 010
SW-846 8270B (TCLP Extracts)	98A0996-002 011
TOTAL METALS SW-846 (HG)	98A0996-002 012
AQUEOUS RADSCREEN - DOT	98A0996-003 013
GROSS ALPHA/BETA - NO RAD ADDED (WASTE)	98A0996-003 013
FINGERPRINT (559)	98A0996-003 014
SW-846 8260 (Water, Aqueous Waste)	98A0996-003 015
SW-846 8260 (Water, Aqueous Waste)	98A0996-003 016
SW-846 8270B (TCLP Extracts)	98A0996-003 017
TOTAL METALS SW-846 (HG)	98A0996-003 018

Date Sampled		Phone	Pager
Process Contact	**M. AYCOCK**	5309	7508
Alternate Contact	**P. VALENTINELLI**	6047	

Returning Excess Sample Material

Unmodified sample material remaining after analysis is generally returned to the generator The generator must be prepared to receive and dispose of excess sample material for applicable state and federal regulations Regulatory exclusions for returning excess sample material are specified in the Code of Colorado Regulations (CCR) 1007-3, Part 261 4(d) 'Samples' If problems with the disposal of excess sample material are encountered, the Environmental Coordinator for the generation area should be contacted for resolution of the issues Only sample material which has not been modified during analysis will be returned Material which has been acidified for preservation purposed will not be returned

INTER-DEPARTMENT DELIVERY.

Deliver To
Building Organization

Date 02/03/98 Page 4

Thermo NUtech - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80402
(303) 966-6860

RIN: 98A0996
Report Date: 02/25/98

Sample and Duplicate Analysis Results

Customer Sample ID	Lab Sample ID	Gross Alpha			Gross Beta			Units	QC Batch
		Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA		
98A0996-001 001	98020069-01	0 7	0 6	1 3	0.7	0 9	2.2	pCi/l	98AB026
98A0996-002 007	98020069-02	0 8	0 6	1 3	1 5	0 9	2.1	pCi/l	98AB026
98A0996-003 013	98020069-03	0.6	0.6	1 4	1 6	0.9	2.1	pCi/l	98AB026
98A0996-004 019	98020069-04	0.9	0 4	1 4	1 3	0.7	2 2	pCi/l	98AB026
98A0996-004 019	98020069-06 D	0.7	0 6	1 4	0 5	1 0	2.2	pCi/l	98AB026

Preparation Blank Results

QC Batch	Lab Sample ID	Gross Alpha			Gross Beta			Units
		Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	
98AB026	98020069-09	-0 1	0.5	1 2	0.6	0 9	2.2	pCi/l

LCS Results

QC Batch	Lab Sample ID	Gross Alpha			Gross Beta			Units	SRM
		Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA		
98AB026	98020069-10	24 4	3.5	5.1	24 6	3.7	6.9	pCi/l	8AB_CTRL10

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Thermo NUtech - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80402
(303) 966-6860

RIN. 98A0996
Report Date: 02/25/98

Method Summary

Gross alpha and gross beta activities are measured by evaporating an aliquot of the prepared sample onto a counting planchet and counting the alpha and beta activites in a low background, thin-windowed, gas flow proportional counter Organics or combustible solids are ashed, the residue dissolved in acid, and the solution or an aliquot of the solution is evaporated onto a counting planchet. Aqueous samples are concentrated and then evaporated onto a counting planchet. Analysis of aqueous samples and prepared non-aqueous samples is described in detail in Rocky Flats Procedure, L-6240, *"Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples"* Preparation of oils, solvents and other combustible organics is described in L-6194, *"Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity"* The counting procedure is described in procedure L-6295, *"Operation of the Tennelec LB4100 Gas Proportional Counters"*

The detector counting efficiency and self-absorption effects of the salt residue on the planchet are determined from calibration curves which are generated by counting several planchets prepared with a known amount of alpha or beta activity and increasing amounts of salt (0 to 100 mg) Americium-241 is used as the spike for the alpha curves and a solution of Sr-90, Y-90 is used for the beta curves These standards are prepared from certified reference material which is traceable to the National Institute of Standards Technology (NIST)

The theoretical minimum detectable activity (MDA) for the analysis is based on the detector background, detector efficiency and self-absorption effects, count time and quantity of sample analyzed. The MDA for each analysis is calculated and is also reported If the reported result is based on the average of two or more counts, the average MDA is reported

Quality Control Summary

A sample batch consists of eleven or fewer samples, a duplicate of one of the samples, an alpha and a beta laboratory control sample, and a preparation blank. Each set of samples forms a "QC Batch" and is assigned a QC batch number A sample can be traced back to its corresponding quality control samples through the QC Batch number The preparation blank (PB), an aliquot of deionized, distilled water, is prepared and analyzed with the samples to confirm that the samples were not contaminated during the analysis The activities reported for samples and standards were not corrected for preparation blank activity The alpha and beta laboratory control samples are aqueous standards of ^{241}Am and ^{90}Sr, respectively The SRM standards used to prepared these standards are traceable to NIST The duplicate, designated as the sample ID followed by a "D", is a second aliquot of one of the samples in the QC Batch which is carried through the procedure as a separate sample.

The instrument QC includes determining instrument backgrounds weekly and counting an instrument check source daily on the Tennelec LB4100 multidetector gas proportional counters. The instrument backgrounds are based on the average of at least five, and normally ten or more, 4 hour counts The instrument check sources are counted daily to verify that the efficiencies of the detectors have not changed A summary of the instrument backgrounds is included in the instrument raw data section of this report. The daily check source information is available in the supporting documentation package

Narrative

These samples were submitted for radscreen analysis and analysis of gross alpha/gross beta activity for No-Rad-Added assessment The radscreen analyses were done according to procedure L-6278, *"Sample Preparation for Radiological Screening by Gas Proportional Counting"* in QC batch 98RS038 The gross alpha/gross beta analyses were done using procedure L-6240, *"Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples"* incorporating the quality control requirements of procedure L-6194 *"Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity"* in order to comply with the No-Rad-Added program quality requirements. The gross alpha/gross beta analyses were done in QC batch 98AB026 This batch also included a sample from RIN 98A0997 The first time the planchets were counted, the alpha counts of the two planchets prepared for sample 98020069-04 were statistically different (2σ) These two planchets were recounted and again the alpha counts of the two planchets were statistically different However, planchet "A" initially counted higher than "B" and in the recount, the "A" planchet counted lower than the "B" planchet. All four alpha activities measured for this sample are less than the MDAs for the measurements and are equivalent when all sources of measurement uncertainty are propagated The average activities and MDAs and propagated uncertainties of the four measurements (two counts of two planchets) are reported for sample 98020069-04 Sample 98020069-04 was also used for the lab duplicate (98020069-08) The average alpha activity for sample 98020069-04 is in good agreement with the lab duplicate alpha activity There were no other problems noted in these analyses and all QC data for the batch are acceptable

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Recra LabNet - Chicago
METHOD 8260 VOLATILES

RFW Batch Number: 9802G363 Client: ICF Kaiser-98A0996 Work Order: 11830-001-001-9 Report Date: 02/24/98 09:09 Page: 1a

		Sump 156		Sump 157		Sump 158		Baseline	
	Cust ID:	98A0996-001.	98A0996-001.	98A0996-002.	98A0996-003.	98A0996-003.	98A0996-004.		
		003	003	009	015	015	021		
Sample Information	RFW#:	001	001 DL	005	009	009 DL	013		
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER		
	D.F :	1	5	1	1	5	1		
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L		
Surrogate Recovery	4-Bromofluorobenzene	103 %	110 %	102 %	105 %	109 %	103 %		
	Toluene-d8	104 %	105 %	106 %	104 %	106 %	103 %		
	1,2-Dichloroethane-d4	99 %	110 %	96 %	105 %	109 %	103 %		
		fl	fl	fl	fl	fl	fl		
Dichlorodifluoromethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Chloromethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Vinyl chloride		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Bromomethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Chloroethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Trichlorofluoromethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
1,1-Dichloroethene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Methylene Chloride		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
trans-1,2-Dichloroethene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
1,1-Dichloroethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
2,2-Dichloropropane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
cis-1,2-Dichloroethene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Bromochloromethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Chloroform		E	38	26	E	44	E		
1,1,1-Trichloroethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
1,1-Dichloropropene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Carbon Tetrachloride		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Benzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
1,2-Dichloroethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Trichloroethene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
1,2-Dichloropropane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Dibromomethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Bromodichloromethane		5	NA	5	6	NA	6		
Toluene		0.5 U	NA	0.5 U	0.8	NA	0.5 U		
1,1,2-Trichloroethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		
Tetrachloroethene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U		

* = Outside of EPA CLP QC limits.

RM 156

RFW Batch Number 98026363 Client. ICF Kaiser-98A0996 Work Order. 11830-001-001-9 Page 1b

	Cust ID:	98A0996-001. 003	98A0996-001. 003	98A0996-002. 009	98A0996-003. 015	98A0996-003. 015	98A0996-004. 021
	RFW#:	001	001 DL	005	009	009 DL	013
1,3-Dichloropropane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
Dibromochloromethane		0.5 U	NA	0.7	0.5 U	NA	0.5 U
1,2-Dibromoethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
Chlorobenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,1,1,2-Tetrachloroethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
Ethylbenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
Styrene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
Bromoform		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
Isopropylbenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
Bromobenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,1,2,2-Tetrachloroethane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,2,3-Trichloropropane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
n-Propylbenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
2-Chlorotoluene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
4-Chlorotoluene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,3,5-Trimethylbenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
tert-Butylbenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,2,4-Trimethylbenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
sec-Butylbenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,3-Dichlorobenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
p-Isopropyltoluene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,4-Dichlorobenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,2-Dichlorobenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
n-Butylbenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,2-Dibromo-3-chloropropane		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,2,4-Trichlorobenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
Hexachlorobutadiene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
Naphthalene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
1,2,3-Trichlorobenzene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
cis-1,3-Dichloropropene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
trans-1,3-Dichloropropene		0.5 U	NA	0.5 U	0.5 U	NA	0.5 U
Acetone		2 U	NA	2 U	2 U	NA	2 U
2-Butanone		2 U	NA	2 U	2 U	NA	2 U
Carbon Disulfide		2 U	NA	2 U	2 U	NA	2 U
4-Methyl-2-pentanone		2 U	NA	2 U	2 U	NA	2 U
2-Hexanone		2 U	NA	2 U	2 U	NA	2 U

*= Outside of EPA CLP QC limits.

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RM 156

RFW Batch Number: 98026363 Client: ICF Kaiser-98A0996 Work Order: 11830-001-001-9 Page: 1c

Cust ID:	98A0996-001. 003	98A0996-001. 003	98A0996-002. 009	98A0996-003. 015	98A0996-003 015	98A0996-004. 021
RFW#.	001	001 DL	005	009	009 DL	013
Trichlorotrifluoroethane	2 U	NA	2 U	2 U	NA	2 U
Xylene (total)	0.5 U	NA	0.5 U	0.7	NA	0.5 U

*= Outside of EPA CLP QC limits.

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Recra LabNet - Chicago
METHOD 8260 VOLATILES

Report Date: 02/24/98 09.09

RFW Batch Number: 9802G363 Client: ICF Kaiser-98A0996 Work Order: 11830-001-001-9 Page: 2a

Sample Information									
	Cust ID:	98A0996-004. 021 (Baseline)	VBLKDA		VBLKDA BS		VBLKCQ		VBLKCQ BS	
	RFW#:	013 DL	98GVF055-MB1		98GVF055-MB1		98GVF057-MB1		98GVF057-MB1	
	Matrix:	WATER	WATER		WATER		WATER		WATER	
	D.F.:	5	1		1		1		1	
	Units:	UG/L	UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	4-Bromofluorobenzene	104 %	104	%	103	%	104	%	110	%
	Toluene-d8	107 %	107	%	101	%	103	%	109	%
	1,2-Dichloroethane-d4	97 %	98	%	98	%	98	%	103	%
Dichlorodifluoromethane		NA	0.5	U	58	%	0.5	U	68	%
Chloromethane		NA	0.5	U	101	%	0.5	U	108	%
Vinyl chloride		NA	0.5	U	96	%	0.5	U	103	%
Bromomethane		NA	0.5	U	74	%	0.5	U	80	%
Chloroethane		NA	0.5	U	99	%	0.5	U	109	%
Trichlorofluoromethane		NA	0.5	U	61	%	0.5	U	64	%
1,1-Dichloroethene		NA	0.5	U	72	%	0.5	U	69	%
Methylene Chloride		NA	0.5	U	75	%	0.5	U	88	%
trans-1,2-Dichloroethene		NA	0.5	U	80	%	0.5	U	86	%
1,1-Dichloroethane		NA	0.5	U	82	%	0.5	U	87	%
2,2-Dichloropropane		NA	0.5	U	91	%	0.5	U	89	%
cis-1,2-Dichloroethene		NA	0.5	U	92	%	0.5	U	98	%
Bromochloromethane		NA	0.5	U	94	%	0.5	U	102	%
Chloroform		47	0.5	U	85	%	0.5	U	89	%
1,1,1-Trichloroethane		NA	0.5	U	78	%	0.5	U	78	%
1,1-Dichloropropene		NA	0.5	U	86	%	0.5	U	84	%
Carbon Tetrachloride		NA	0.5	U	74	* %	0.5	U	73	* %
Benzene		NA	0.5	U	85	%	0.5	U	90	%
1,2-Dichloroethane		NA	0.5	U	81	%	0.5	U	85	%
Trichloroethene		NA	0.5	U	85	%	0.5	U	90	%
1,2-Dichloropropane		NA	0.5	U	92	%	0.5	U	98	%
Dibromomethane		NA	0.5	U	90	%	0.5	U	99	%
Bromodichloromethane		NA	0.5	U	84	%	0.5	U	90	%
Toluene		NA	0.5	U	87	%	0.5	U	92	%
1,1,2-Trichloroethane		NA	0.5	U	91	%	0.5	U	98	%
Tetrachloroethene		NA	0.5	U	85	%	0.5	U	84	%

*= Outside of EPA CLP QC limits.

QC 42

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RFW Batch Number: 9802G363 Client: ICF Kaiser-98A0996 Work Order: 11830-001-001-9 Page: 2b

	Cust ID:	98A0996-004	VBLKDA		VBLKDA BS		VBLKCQ		VBLKCQ BS	
	RFW#:	021 013 DL	98GVF055-MB1		98GVF055-MB1		98GVF057-MB1		98GVF057-MB1	
1,3-Dichloropropane	NA		0.5	U	96	%	0.5	U	103	%
Dibromochloromethane	NA		0.5	U	88	%	0.5	U	92	%
1,2-Dibromoethane	NA		0.5	U	93	%	0.5	U	100	%
Chlorobenzene	NA		0.5	U	89	%	0.5	U	94	%
1,1,1,2-Tetrachloroethane	NA		0.5	U	86	%	0.5	U	90	%
Ethylbenzene	NA		0.5	U	87	%	0.5	U	90	%
Styrene	NA		0.5	U	92	%	0.5	U	97	%
Bromoform	NA		0.5	U	92	%	0.5	U	98	%
Isopropylbenzene	NA		0.5	U	84	%	0.5	U	86	%
Bromobenzene	NA		0.5	U	89	%	0.5	U	94	%
1,1,2,2-Tetrachloroethane	NA		0.5	U	94	%	0.5	U	102	%
1,2,3-Trichloropropane	NA		0.5	U	92	%	0.5	U	95	%
n-Propylbenzene	NA		0.5	U	90	%	0.5	U	87	%
2-Chlorotoluene	NA		0.5	U	92	%	0.5	U	91	%
4-Chlorotoluene	NA		0.5	U	88	%	0.5	U	88	%
1,3,5-Trimethylbenzene	NA		0.5	U	85	%	0.5	U	84	%
tert-Butylbenzene	NA		0.5	U	87	%	0.5	U	86	%
1,2,4-Trimethylbenzene	NA		0.5	U	87	%	0.5	U	88	%
sec-Butylbenzene	NA		0.5	U	86	%	0.5	U	83	%
1,3-Dichlorobenzene	NA		0.5	U	93	%	0.5	U	96	%
p-Isopropyltoluene	NA		0.5	U	84	%	0.5	U	83	%
1,4-Dichlorobenzene	NA		0.5	U	96	%	0.5	U	97	%
1,2-Dichlorobenzene	NA		0.5	U	89	%	0.5	U	96	%
n-Butylbenzene	NA		0.5	U	89	%	0.5	U	86	%
1,2-Dibromo-3-chloropropane	NA		0.5	U	100	%	0.5	U	108	%
1,2,4-Trichlorobenzene	NA		0.5	U	96	%	0.5	U	101	%
Hexachlorobutadiene	NA		0.5	U	85	%	0.5	U	80	%
Naphthalene	NA		0.5	U	101	%	0.5	U	108	%
1,2,3-Trichlorobenzene	NA		0.5	U	92	%	0.5	U	101	%
cis-1,3-Dichloropropene	NA		0.5	U	83	%	0.5	U	93	%
trans-1,3-Dichloropropene	NA		0.5	U	89	%	0.5	U	92	%
Acetone	NA		2	U	108	%	2	U	105	%
2-Butanone	NA		2	U	128	%	2	U	106	%
Carbon Disulfide	NA		2	U	65	%	2	U	64	%
4-Methyl-2-pentanone	NA		2	U	113	%	2	U	110	%
2-Hexanone	NA		2	U	124	%	2	U	116	%

* = Outside of EPA CLP QC limits.

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RFW Batch Number: 9802G363 Client: ICF Kaiser-98A0996 Work Order: 11830-001-001-9 Page: 2c

	Cust ID:	98A0996-004.	VBLKDA	VBLKDA BS	VBLKCQ	VBLKCQ BS
	RFW#:	021 013 DL	98GVF055-MB1	98GVF055-MB1	98GVF057-MB1	98GVF057-MB1
Trichlorotrifluoroethane	NA		2 U	2 U	2 U	2 U
Xylene (total)	NA		0.5 U	92 %	0.5 U	96 %

*= Outside of EPA CLP QC limits

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Recra LabNet - Chicago
SEMIVOLATILES BY GC/MS. TCLP LEACHATE
Report Date: 03/04/98 14:02

RPW Batch Number: 98026363 Client: ICF Kaiser-98A0996 Work Order: 11830-001-001-9 Page 1a

Sample Information													
	Cust ID:	98A0996-001.		98A0996-001.		98A0996-002.		98A0996-003.		98A0996-004.		SBLKHX	
	RFW#:	005 003		005 003 MS		011 007		017 011		023 015		98GB0056-MB1	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1		1		1		1		1		1	
	Units:	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	2-Fluorophenol	71	%	76	%	72	%	76	%	57	%	60	%
	Phenol-d5	78	%	92	%	77	%	73	%	61	%	64	%
	Nitrobenzene-d5	85	%	101	%	90	%	96	%	72	%	72	%
	2-Fluorobiphenyl	82	%	99	%	87	%	89	%	75	%	68	%
	2,4,6-Tribromophenol	62	%	75	%	63	%	61	%	56	%	51	%
	p-Terphenyl-d14	90	%	101	%	85	%	90	%	94	%	84	%
Pyridine		70	U	81	%	70	U	70	U	70	U	7	U
1,4-Dichlorobenzene		50	U	80	%	50	U	50	U	50	U	5	U
o-Cresol		60	U	90	%	60	U	60	U	60	U	6	U
meta & para-Cresol		30	U	89	%	30	U	30	U	30	U	3	U
Hexachloroethane		70	U	89	%	70	U	70	U	70	U	7	U
Nitrobenzene		40	U	96	%	40	U	40	U	40	U	4	U
Hexachlorobutadiene		80	U	70	%	80	U	80	U	80	U	8	U
2,4,6-Trichlorophenol		30	U	94	%	30	U	30	U	30	U	3	U
2,4,5-Trichlorophenol		40	U	85	%	40	U	40	U	40	U	4	U
2,4-Dinitrotoluene		20	U	114	%	20	U	20	U	20	U	2	U
Hexachlorobenzene		30	U	78	%	30	U	30	U	30	U	3	U
Pentachlorophenol		60	U	89	%	60	U	60	U	60	U	6	U

*= Outside of EPA CLP QC limits.

Recra LabNet - Chicago
SEMIVOLATILES BY GC/MS, TCLP LEACHATE ------ Report Date: 03/04/98 14:02

RFW Batch Number: 9802G363 Client: ICF Kaiser-98A0996 Work Order: 11830-001-001-9 Page: 2a

Sample Information		Cust ID:	SBLKHX BS		SBLKHY		SBLKHZ		SBLKIA	
		RFW#:	98GB0056-MB1		98GB0056-TC1		98GB0056-TC2		98GB0056-TC3	
		Matrix	WATER		WATER		WATER		WATER	
		D.F.:	1		1		1		1	
		Units:	ug/L		ug/L		ug/L		ug/L	
Surrogate Recovery	2-Fluorophenol		85	%	70	%	68	%	76	%
	Phenol-d5		99 *	%	75	%	74	%	82	%
	Nitrobenzene-d5		100	%	86	%	77	%	88	%
	2-Fluorobiphenyl		96	%	86	%	76	%	89	%
	2,4,6-Tribromophenol		71	%	56	%	60	%	66	%
	p-Terphenyl-d14		104	%	102	%	97	%	102	%
Pyridine			56	%	70	U	70	U	70	U
1,4-Dichlorobenzene			77	%	50	U	50	U	50	U
o-Cresol			89	%	60	U	60	U	60	U
meta & para-Cresol			90	%	30	U	30	U	30	U
Hexachloroethane			86	%	70	U	70	U	70	U
Nitrobenzene			95	%	40	U	40	U	40	U
Hexachlorobutadiene			67	%	80	U	80	U	80	U
2,4,6-Trichlorophenol			88	%	30	U	30	U	30	U
2,4,5-Trichlorophenol			89	%	40	U	40	U	40	U
2,4-Dinitrotoluene			106	%	20	U	20	U	20	U
Hexachlorobenzene			74	%	30	U	30	U	30	U
Pentachlorophenol			85	%	60	U	60	U	60	U

*= Outside of EPA CLP QC limits.

RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 02/25/98

CLIENT: ICF Kaiser-98A0996
WORK ORDER. 11830-001-001-9999-00

RECRA LOT #: 9802G363

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-004	98A0996-001.006 Sump 156	Silver, Total	10.0 u	UG/L	10.0
		Aluminum, Total	137	UG/L	13.1
		Arsenic, Total	1.6 u	UG/L	1.6
		Barium, Total	21.9	UG/L	0.20
		Beryllium, Total	0.20 u	UG/L	0.20
		Calcium, Total	13500	UG/L	7.6
		Cadmium, Total	0.40 u	UG/L	0.40
		Cobalt, Total	0.50 u	UG/L	0.50
		Chromium, Total	0.51	UG/L	0.40
		Copper, Total	0.70 u	UG/L	0.70
		Iron, Total	59.7	UG/L	16 9
		Mercury, Total	0.10 u	UG/L	0.10
		Potassium, Total	1000	UG/L	7 4
		Lithium, Total	4.7	UG/L	1.3
		Magnesium, Total	3200	UG/L	7.6
		Manganese, Total	2.0	UG/L	0.50
		Molybdenum, Total	21.5	UG/L	0.50
		Sodium, Total	7510	UG/L	177
		Nickel, Total	0.60 u	UG/L	0.60
		Lead, Total	4.0	UG/L	1.2
		Antimony, Total	3 1	UG/L	1 4
		Selenium, Total	1.8 u	UG/L	1 8
		Tin, Total	10.4	UG/L	1 7
		Strontium, Total	114	UG/L	0 20
		Thallium, Total	2.3 u	UG/L	2 3
		Vanadium, Total	0.60 u	UG/L	0 60
		Zinc, Total	9.6	UG/L	0 60

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RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 02/25/98

CLIENT: ICF Kaiser-98A0996 —
WORK ORDER. 11830-001-001-9999-00

RECRA LOT #: 9802G363

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-008	98A0996-002.012 Sump 157	Silver, Total	10.0 u	UG/L	10.0
		Aluminum, Total	138	UG/L	13.1
		Arsenic, Total	1.6 u	UG/L	1.6
		Barium, Total	21.9	UG/L	0.20
		Beryllium, Total	0.20 u	UG/L	0.20
		Calcium, Total	13200	UG/L	7.6
		Cadmium, Total	3.1	UG/L	0.40
		Cobalt, Total	0.50 u	UG/L	0.50
		Chromium, Total	13.2	UG/L	0.40
		Copper, Total	4.8	UG/L	0.70
		Iron, Total	152	UG/L	16.9
		Mercury, Total	0.10 u	UG/L	0.10
		Potassium, Total	1010	UG/L	7.4
		Lithium, Total	4.2	UG/L	1.3
		Magnesium, Total	3090	UG/L	7.6
		Manganese, Total	19.0	UG/L	0.50
		Molybdenum, Total	20.9	UG/L	0.50
		Sodium, Total	7920	UG/L	177
		Nickel, Total	111	UG/L	0.60
		Lead, Total	4.1	UG/L	1 2
		Antimony, Total	1.4 u	UG/L	1.4
		Selenium, Total	1.8 u	UG/L	1 8
		Tin, Total	1.7 u	UG/L	1.7
		Strontium, Total	109	UG/L	0.20
		Thallium, Total	2.3 u	UG/L	2.3
		Vanadium, Total	0.60 u	UG/L	0 60
		Zinc, Total	14.1	UG/L	0 60

RECRA LABNFT - CHICAGO

INORGANICS DATA SUMMARY REPORT 02/25/98

CLIENT: ICF Kaiser-98A0996 —
WORK ORDER: 11830-001-001-9999-00

RECRA LOT #: 9802G363

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-012	98A0996-003.018 Sump 158	Silver, Total	10.0 u	UG/L	10.0
		Aluminum, Total	135	UG/L	13.1
		Arsenic, Total	1.6 u	UG/L	1.6
		Barium, Total	20.6	UG/L	0.20
		Beryllium, Total	0.20 u	UG/L	0.20
		Calcium, Total	12600	UG/L	7.6
		Cadmium, Total	0.40 u	UG/L	0.40
		Cobalt, Total	0.50 u	UG/L	0.50
		Chromium, Total	1.1	UG/L	0.40
		Copper, Total	0.70 u	UG/L	0.70
		Iron, Total	79.3	UG/L	16.9
		Mercury, Total	0.10 u	UG/L	0.10
		Potassium, Total	1030	UG/L	7.4
		Lithium, Total	5.6	UG/L	1.3
		Magnesium, Total	3030	UG/L	7.6
		Manganese, Total	1.6	UG/L	0.50
		Molybdenum, Total	20.5	UG/L	0.50
		Sodium, Total	7490	UG/L	177
		Nickel, Total	0.60 u	UG/L	0 60
		Lead, Total	2.4	UG/L	1 2
		Antimony, Total	1.4 u	UG/L	1.4
		Selenium, Total	1.8 u	UG/L	1.8
		Tin, Total	4.7	UG/L	1 7
		Strontium, Total	107	UG/L	0 20
		Thallium, Total	2.3 u	UG/L	2.3
		Vanadium, Total	0.60 u	UG/L	0.60
		Zinc, Total	4.3	UG/L	0.60

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RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 02/25/98

CLIENT: ICF Kaiser-98A0996 —
WORK ORDER: 11830-001-001-9999-00

RECRA LOT #. 9802G363

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-016	98A0996-004.024	Silver, Total	10.0	u	UG/L	10.0
	Baseline	Aluminum, Total	137		UG/L	13.1
		Arsenic, Total	1.6	u	UG/L	1.6
		Barium, Total	22.2		UG/L	0.20
		Beryllium, Total	0.20	u	UG/L	0.20
		Calcium, Total	13200		UG/L	7.6
		Cadmium, Total	0.40	u	UG/L	0.40
		Cobalt, Total	0.50	u	UG/L	0.50
		Chromium, Total	0.41		UG/L	0.40
		Copper, Total	0.70	u	UG/L	0.70
		Iron, Total	38.5		UG/L	16.9
		Mercury, Total	0.10	u	UG/L	0 10
		Potassium, Total	972		UG/L	7.4
		Lithium, Total	4.9		UG/L	1.3
		Magnesium, Total	3180		UG/L	7.6
		Manganese, Total	1.3		UG/L	0.50
		Molybdenum, Total	21.6		UG/L	0.50
		Sodium, Total	7290		UG/L	177
		Nickel, Total	0.60	u	UG/L	0.60
		Lead, Total	2.1		UG/L	1.2
		Antimony, Total	2.2		UG/L	1 4
		Selenium, Total	2 2		UG/L	1 8
		Tin, Total	1.7	u	UG/L	1.7
		Strontium, Total	112		UG/L	0.20
		Thallium, Total	2 3	u	UG/L	2 3
		Vanadium, Total	0.60	u	UG/L	0.60
		Zinc, Total	6.4		UG/L	0 60

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WASTE CHARACTERISTICS REPORT

Case Narrative for Fingerprint Analysis

Lab Name:	559 Radioanalytical Laboratories	RF Sample ID:	98A0996-001.002
Lab Code:	559 RIL	Lab Sample ID:	98A0996-001.002
		RIN:	98A0996-001.002

This report provides fingerprint data for a sample analyzed per procedure L-4178 Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. This method has been approved by the APO on 6/19/1997.

Case Narrative:

On February 9, 1998 this Sump sample was received in the 559 Laboratory.
All QC was within limits. There were no anomalies during analysis.

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WASTE CHARACTERISTICS REPORTING FORM 1

Analysis Data Sheet for the Fingerprint Procedure

Lab Name: 559 Radioanalytical Laboratories
Lab Code: 559 RL
Date of Analysis: Feb 10 1998

RF Sample ID: 98A0996-001.002
Lab Sample ID: 98A0996-001.002
RIN: 98A0996-001.002

Parameter ID	Parameter Name	Result	Qualifiers C	Qualifiers Q	Units
	Physical Appearance	Single phase, transparent, colorless, non-viscous liquid.			N A
	Water Test	Positive			N A
10-29-7	pH	5			S. U.
	Specific Gravity	0.9963			*1
	Miscible with	Water			N A
	Reactivity with Water	No			N A
RFS-FP-97	Flash Point	NA, Aqueous Sample			degrees C
	Chlorinated Solvents	NA, Aqueous Sample			ppm

Notes:
NA - Not Applicable
*1 - relative to water @ 20 C

Approval: [signature]

Peer Review: [signature]

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WASTE CHARACTERISTICS REPORT

Case Narrative for Fingerprint Analysis

Lab Name: 559 Radioanalytical Laboratories	RF Sample ID:	98A0996-002.008
Lab Code: 559 RIL	Lab Sample ID:	98A0996-002.008
	RIN:	98A0996-002.008

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. This method has been approved by the APO on 6/19/1997.

Case Narrative:

On February 9, 1998 this Sump sample was received in the 559 Laboratory. All QC was within limits. There were no anomalies during analysis.

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WASTE CHARACTERISTICS REPORTING FORM 1

Analysis Data Sheet for the Fingerprint Procedure

Lab Name: 559 Radioanalytical Laboratories — RF Sample ID: 98A0996-002.008

Lab Code: 559 RIL — Lab Sample ID: 98A0996-002.008

Date of Analysis: Feb 10 1998 — RIN: 98A0996-002.008

Parameter ID	Parameter Name	Result	Qualifiers C	Qualifiers Q	Units
	Physical Appearance	Single phase, transparent, colorless, non-viscous liquid.			N A
	Water Test	Positive			N A
10-29-7	pH	5			S. U.
	Specific Gravity	0.9999			*1
	Miscible with	Water			N A
	Reactivity with Water	No			N A
RFS-FP-97	Flash Point	NA, Aqueous Sample			degrees C
	Chlorinated Solvents	NA, Aqueous Sample			ppm

Notes:
NA - Not Applicable
*1 - relative to water @ 20 C

Approval:

Peer Review:

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WASTE CHARACTERISTICS REPORT

Case Narrative for Fingerprint Analysis

Lab Name: 559 Radioanalytical Laboratories	RF Sample ID:	98A0996-004.020
Lab Code: 559 RIL	Lab Sample ID:	98A0996-004.020
	RIN:	98A0996-004.020

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. This method has been approved by the APO on 6/19/1997.

Case Narrative:

On February 9, 1998 this Sump sample was received in the 559 Laboratory. All QC was within limits. There were no anomalies during analysis.

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WASTE CHARACTERISTICS REPORTING FORM 1

Analysis Data Sheet for the Fingerprint Procedure

Lab Name:	559 Radioanalytical Laboratories	RF Sample ID:	98A0998-004.020
Lab Code:	559 RIL	Lab Sample ID:	98A0998-004.020
Date of Analysis:	Feb 10 1998	RIN:	98A0998-004.020

Parameter ID	Parameter Name	Result	Qualifiers C	Qualifiers Q	Units
	Physical Appearance	Single phase, transparent, colorless, non-viscous liquid.			N A
	Water Test	Positive			N A
10-29-7	pH	5			S. U.
	Specific Gravity	1.0044			*1
	Miscible with	Water			N A
	Reactivity with Water	No			N A
RFS-FP-97	Flash Point	NA, Aqueous Sample			degrees C
	Chlorinated Solvents	NA, Aqueous Sample			ppm

Notes:
NA - Not Applicable
*1 - relative to water @ 20 C

Approval: ____________

Peer Review: ____________

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WASTE CHARACTERISTICS REPORT

Case Narrative for Fingerprint Analysis

Lab Name: 559 Radioanalytical Laboratories	RF Sample ID:	98A0996-003.014
Lab Code: 559 RIL	Lab Sample ID:	98A0996-003.014
	RIN:	98A0996-003.014

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. This method has been approved by the APO on 6/19/1997.

Case Narrative:

On February 9, 1998 this Sump sample was received in the 559 Laboratory. All QC was within limits. There were no anomalies during analysis.

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WASTE CHARACTERISTICS REPORTING FORM 1

Analysis Data Sheet for the Fingerprint Procedure

Lab Name: 559 Radioanalytical Laboratories | **RF Sample ID:** 98A0996-003.014

Lab Code: 559 RIL | **Lab Sample ID:** 98A0996-003.014

Date of Analysis: Feb 10 1998 | **RIN:** 98A0996-003.014

Parameter ID	Parameter Name	Result	Qualifiers C	Qualifiers Q	Units
	Physical Appearance	Single phase, transparent, colorless, non-viscous liquid.			NA
	Water Test	Positive			NA
10-29-7	pH	5			S. U.
	Specific Gravity	0.9990			*1
	Miscible with	Water			NA
	Reactivity with Water	No			NA
RFS-FP-97	Flash Point	NA, Aqueous Sample			degrees C
	Chlorinated Solvents	NA, Aqueous Sample			ppm

Notes:
NA - Not Applicable
*1 - relative to water @ 20 C

Approval: [signature]
Peer Review: [signature]

Appendix C - Analytical Results for the Sump in Room 125

Sample from rinsate from B123, Sump in Room #125
125 SUMP
Sample # 98A1028

Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	Is the contaminant a "Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
1,1 Dichloroethylene	0 5U	7 00E-03	7 ppb	NO	YES
1,1 2-Trichloroethane	0 5U	5 00E-03	5 ppb	NO	YES
1-1-1-Trichloroethane	0 5U	2 00E-01	200 ppb	NO	YES
1-2-Dichloroethane	0 5U	5 00E-03	5 ppb	NO	YES
2-Butanone (Methyl ethyl ketone)	2 U	2 47E+00	2470 ppb	NO	YES
Acetone	27	3 65E+00	3650 ppb	NO	YES
Aluminum, Al	100 U	1 06E+02	106,000 ppb	NO	NO
Antimony, Sb	50 U	6 00E-03	6 ppb	NO	NO
Arsenic, As	50 U	5 00E-02	50 ppb	NO	YES
Barium, Ba	25	2 00E+00	2,000 ppb	NO	YES
Benzene	0 5 U	5 00E-03	5 ppb	NO	YES
Beryllium, Be	2 5 U	4 00E-03	4 ppb	NO	NO
Bromodichloromethane	7	1 00E-01	100 ppb	NO	NO
Cadmium, Cd	5 U	5 00E-03	5 ppb	NO	YES
Carbon disulfide	2 0 U	2 76E-02	27 6 ppb	NO	YES
Carbon tetrachloride	0 5U	5 00E-03	5 ppb	NO	YES
Chlorobenzene	0 5U	1 00E-01	100 ppb	NO	YES
Chloroform	61	1 00E-01	100 ppb	NO	YES
Chromium, Cr	10 U	1 00E-01	100 ppb	NO	YES
Cobalt, Co	10 U	2 19E+00	2,190 ppb	NO	NO
Copper, Cu	12	1 30E+00	1,300 ppb	NO	NO
Ethylbenzene	0 5U	7 00E-01	700 ppb	NO	YES
Iron, Fe	190	NA, not on Tier 2 Table	NA	NO	NO
Lead, Pb	56	Not found in RFCA Tier 2 Table	NA	The MCL for lead is 15 ppb	YES Under the Safe Drinking Water Act, 15 ppb is the MCL for lead.

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Sump 125 Building 123 Rinsate Sample
Sampled 3/10/98
Summarized Monday March 23 1998
Ted A Hopkins

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Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	Is the contaminant a "Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
Lithium, Li	5 U	7 30E+01	73,000 ppb	NO	NO
Magnesium, Mg	3500	Not found in RFCA Tier 2 Table	NA	NO	NO
Manganese Mn	5 U	1 83E-01	183 ppb	NO	NO
Mercury, Hg	0 2 U	2 00E-03	2 ppb	NO	YES
Methylene chloride	0 5U	5 00E-03	5 ppb	NO	YES
Molybdenum Mo	50 U	1 83E-01	183 ppb	NO	NO
Nickel, Ni	10 U	1 00E-01	100 ppb	NO	NO
Potassium K	1 100	Not found in the RFCA Tier 2 Table	NA	NO	NO
Pyridine	70 U	Not on Tier 2 List	NA	NA, not on Tier 2 list	YES
Selenium, Se	50 U	5 00E-02	50 ppb	NO	YES
Silver Ag	5 U	1 83E-01	183 ppb	NO	YES
Sodium	8 400	Not found in RFCA Tier 2 Table	NA	NO	NO
Strontium Sr	120	2 19E+01	21 900 ppb	NO	NO
Tetrachloroethylene	0 5 U	5 00E-03	5 ppb	NO	YES
Thallium Tl	250 U	2 00E-03	2 ppb	NO	NO
Tin Sn	50 U	2 19E+01	21 900 ppb	NO	NO
Toluene	0 5U	1 00E+00	1000 ppb	NO	YES
Trichloroethylene	0 5U	5 00E-03	5 ppb	NO	YES
Vanadium, V	5 U	2 56E-01	256 ppb	NO	NO
Vinyl chloride	0 5U	2 00E-03	2 ppb	NO	YES
Xylenes	0 5U	1 00E+01	10,000 ppb	NO	YES
Zinc, Zn	28	1 10E+01	11,000 ppb	NO	NO

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Sump 125 Building 123 Rinsate Sample
Sampled 3/10/98
Summarized Monday March 23 1998
Ted A Hopkins

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5/

Need

APO SAMPLE RECEIPT

This sample receipt is supplied to waste generators as notification of sample collection Inquiries into the status of this sample may be directed to the Analytical Projects Office (APO) by calling 966-2403, 966-7789, or 966-3771. The APO references samples by the following identification numbers

RIN. **98A1028**
APO Event **98A1028-001**
Duplicate ID
Issue Date: 02/09/98

Waste Stream ID: 123-0-0
Customer Sample ID SAMPLE 1
Field Blank ID.
Equipment Blank ID:
Trip Blank ID·

Sample Description: **BLDG 123 SUMP**
Other Id. **RCRA SAMPLE**
Sample Location: **BLDG 123, ROOM 125**

Analyses Requested:	**Bottle ID**
AQUEOUS RADSCREEN - DOT	98A1028-001 001 TNU
✓GROSS ALPHA/BETA (AQUEOUS)	98A1028-001.001
✓FINGERPRINT (559)	98A1028-001.002 559
✓SW-846 8260 (Water, Aqueous Waste)	98A1028-001.003
✓SW-846 8260 (Water, Aqueous Waste)	98A1028-001.004
✓SW-846 8270B (TCLP Extracts)	98A1028-001 005
✓TOTAL METALS SW-846 (HG)	98A1028-001.006

RECRU for PWRE

		Phone	Pager
Date Sampled.			
Process Contact.	**MARY AYCOCK**	5309	7508
Alternate Contact·	**P. VALENTINELLI**	6047	

Returning Excess Sample Material

Unmodified sample material remaining after analysis is generally returned to the generator. The generator must be prepared to receive and dispose of excess sample material for applicable state and federal regulations Regulatory exclusions for returning excess sample material are specified in the Code of Colorado Regulations (CCR) 1007-3, Part 261.4(d) 'Samples'. If problems with the disposal of excess sample material are encountered, the Environmental Coordinator for the generation area should be contacted for resolution of the issues Only sample material which has not been modified during analysis will be returned Material which has been acidified for preservation purposed will not be returned

INTER-DEPARTMENT DELIVERY:

Deliver To
Building Organization·

Date. 02/09/98 Page 4

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ThermoNUtech - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80402
(303) 966-6860

RIN: 98A1028
ReportDate: 02/15/98

Sample and Duplicate Analysis Results

Customer Sample ID	Lab Sample ID	Gross Alpha			Gross Beta			Units	QC Batch
		Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA		
98A1028-001 001	98020150-01	2	1	1	1	1	2	pCi/l	98AB028
98A1028-001.001	98020150-05 D	1	1	1	2	1	2	pCi/l	98AB028

Preparation Blank Results

QC Batch	Lab Sample ID	Gross Alpha			Gross Beta			Units
		Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	
98AB028	98020150-06	0.0	0 7	1.2	0.2	1 3	2.2	pCi/l

LCS Results

QC Batch	Lab Sample ID	Gross Alpha			Gross Beta			Units	SRM
		Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA		
98AB028	98020150-07	20.0	4.5	4.8	22.1	5.1	6.9	pCi/l	8AB_CTRL10

0009

Thermo NUtech - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80402
(303) 966-6860

RIN: 98A1028
Report Date: 02/15/98

Method Summary

Gross alpha and gross beta activities are measured by evaporating an aliquot of the prepared sample onto a counting planchet and counting the alpha and beta activities in a low background, thin-windowed, gas flow proportional counter. Organics or combustible solids are ashed, the residue dissolved in acid, and the solution or an aliquot of the solution is evaporated onto a counting planchet. Aqueous samples are concentrated and then evaporated onto a counting planchet. Analysis of aqueous samples and prepared non-aqueous samples is described in detail in Rocky Flats Procedure, L-6240, *"Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples"* Preparation of oils, solvents and other combustible organics is described in L-6194, *"Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity"*. The counting procedure is described in procedure L-6295, *"Operation of the Tennelec LB4100 Gas Proportional Counters"*

The detector counting efficiency and self-absorption effects of the salt residue on the planchet are determined from calibration curves which are generated by counting several planchets prepared with a known amount of alpha or beta activity and increasing amounts of salt (0 to 100 mg) Americium-241 is used as the spike for the alpha curves and a solution of Sr-90, Y-90 is used for the beta curves. These standards are prepared from certified reference material which is traceable to the National Institute of Standards Technology (NIST).

The theoretical minimum detectable activity (MDA) for the analysis is based on the detector background, detector efficiency and self-absorption effects, count time and quantity of sample analyzed. The MDA for each analysis is calculated and is also reported. If the reported result is based on the average of two or more counts, the average MDA is reported.

Quality Control Summary

A sample batch consists of eleven or fewer samples, a duplicate of one of the samples, an alpha and a beta laboratory control sample, and a preparation blank. Each set of samples forms a "QC Batch" and is assigned a QC batch number. A sample can be traced back to its corresponding quality control samples through the QC Batch number. The preparation blank (PB), an aliquot of deionized, distilled water, is prepared and analyzed with the samples to confirm that the samples were not contaminated during the analysis. The activities reported for samples and standards were not corrected for preparation blank activity The alpha and beta laboratory control samples are aqueous standards of ^{241}Am and ^{90}Sr, respectively. The SRM standards used to prepared these standards are traceable to NIST. The duplicate, designated as the sample ID followed by a "D", is a second aliquot of one of the samples in the QC Batch which is carried through the procedure as a separate sample.

The instrument QC includes determining instrument backgrounds weekly and counting an instrument check source daily on the Tennelec LB4100 multidetector gas proportional counters. The instrument backgrounds are based on the average of at least five, and normally ten or more, 4 hour counts. The instrument check sources are counted daily to verify that the efficiencies of the detectors have not changed A summary of the instrument backgrounds is included in the instrument raw data section of this report. The daily check source information is available in the supporting documentation package.

Narrative

This sample was submitted for a radscreen analysis and also for analysis of gross alpha/gross beta activity The radscreen planchets were prepped according to procedure L-6278, *"Sample Preparation for Radiological Screening by Gas Proportional Counting"*, in QC batch 98RS042. A copy of the radscreen report is included in Appendix A of this report. The samples were prepared for analysis of gross alpha/gross beta activity using procedure L-6240, *"Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples"* in QC batch 98AB028. Sample 98020150-05 is a lab duplicate of sample 98020150-01 There were no problems noted with these analyses and all QC data are acceptable.

0007

Recra LabNet - Chicago
METHOD 8260 VOLATILES

B123, Rm 125 sump

Report Date: 03/10/98 15:33

RFW Batch Number: 9802G393 Client: ICF Kaiser-98A1028 Work Order: 11830-001-001-9 Page: 1a

Sample Information	Cust ID:	98A1028-001.003	98A1028-001.003	VBLKFM	VBLKFM BS
	RFW#:	001	001 DL	98GVT054-MB1	98GVT054-MB1
	Matrix:	WATER	WATER	WATER	WATER
	D.F.:	1	5	1	1
	Units:	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	4-Bromofluorobenzene	97 %	88 %	98 %	109 %
	Toluene-d8	100 %	96 %	100 %	105 %
	1,2-Dichloroethane-d4	106 %	103 %	109 %	120 %
Dichlorodifluoromethane		0.5 U	NA	0.5 U	78 %
Chloromethane		0.5 U	NA	0.5 U	117 %
Vinyl chloride		0.5 U	NA	0.5 U	116 %
Bromomethane		0.5 U	NA	0.5 U	91 %
Chloroethane		0.5 U	NA	0.5 U	112 %
Trichlorofluoromethane		0.5 U	NA	0.5 U	89 %
1,1-Dichloroethene		0.5 U	NA	0.5 U	99 %
Methylene Chloride		0.5 U	NA	0.5 U	102 %
trans-1,2-Dichloroethene		0.5 U	NA	0.5 U	103 %
1,1-Dichloroethane		0.5 U	NA	0.5 U	113 %
cis-1,2-Dichloroethene		0.5 U	NA	0.5 U	108 %
2,2-Dichloropropane		0.5 U	NA	0.5 U	87 %
Bromochloromethane		0.5 U	NA	0.5 U	102 %
Chloroform		E	61	0.5 U	118 %
1,1,1-Trichloroethane		0.5 U	NA	0.5 U	118 %
1,1-Dichloropropene		0.5 U	NA	0.5 U	113 %
Carbon Tetrachloride		0.5 U	NA	0.5 U	109 %
Benzene		0.5 U	NA	0.5 U	100 %
1,2-Dichloroethane		0.5 U	NA	0.5 U	114 %
Trichloroethene		0.5 U	NA	0.5 U	99 %
1,2-Dichloropropane		0.5 U	NA	0.5 U	112 %
Dibromomethane		0.5 U	NA	0.5 U	105 %
Bromodichloromethane		7	NA	0.5 U	108 %
Toluene		0.5 U	NA	0.5 U	100 %
1,1,2-Trichloroethane		0.5 U	NA	0.5 U	111 %
Tetrachloroethene		0.5 U	NA	0.5 U	95 %

* Outside of EPA CLP QC limits.

EPA LABORATORY REPORT

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B123, RM 125 sump

RFW Batch Number: 9802G393 Client: ICF Kaiser-98A1028 Work Order: 11830-001-001-9 Page: 1b

	Cust ID:	98A1028-001. 003	98A1028-001. 003	VBLKFM	VBLKFM BS	
	RFW#:	001	001 DL	98GVT054-MB1	98GVT054-MB1	
1,3-Dichloropropane		0.5 U	NA	0.5 U	106	%
Dibromochloromethane		0.5 U	NA	0.5 U	99	%
1,2-Dibromoethane		0.5 U	NA	0.5 U	103	%
Chlorobenzene		0.5 U	NA	0.5 U	102	%
1,1,1,2-Tetrachloroethane		0.5 U	NA	0.5 U	101	%
Ethylbenzene		0.5 U	NA	0.5 U	102	%
Styrene		0.5 U	NA	0.5 U	106	%
Bromoform		0.5 U	NA	0.5 U	104	%
Isopropylbenzene		0.5 U	NA	0.5 U	100	%
Bromobenzene		0.5 U	NA	0.5 U	97	%
1,1,2,2-Tetrachloroethane		0.5 U	NA	0.5 U	98	%
1,2,3-Trichloropropane		0.5 U	NA	0.5 U	92	%
n-Propylbenzene		0.5 U	NA	0.5 U	103	%
2-Chlorotoluene		0.5 U	NA	0.5 U	104	%
4-Chlorotoluene		0.5 U	NA	0.5 U	103	%
1,3,5-Trimethylbenzene		0.5 U	NA	0.5 U	98	%
tert-Butylbenzene		0.5 U	NA	0.5 U	99	%
1,2,4-Trimethylbenzene		0.5 U	NA	0.5 U	102	%
sec-Butylbenzene		0.5 U	NA	0.5 U	102	%
1,3-Dichlorobenzene		0.5 U	NA	0.5 U	100	%
p-Isopropyltoluene		0.5 U	NA	0.5 U	98	%
1,4-Dichlorobenzene		0.5 U	NA	0.5 U	96	%
1,2-Dichlorobenzene		0.5 U	NA	0.5 U	98	%
n-Butylbenzene		0.5 U	NA	0.5 U	104	%
1,2-Dibromo-3-chloropropane		0.5 U	NA	0.5 U	113	%
1,2,4-Trichlorobenzene		0.5 U	NA	0.5 U	99	%
Hexachlorobutadiene		0.5 U	NA	0.5 U	94	%
Naphthalene		0.6 U	NA	1	80	%
1,2,3-Trichlorobenzene		0.5 U	NA	0.6 U	99	%
cis-1,3-Dichloropropene		0.5 U	NA	0.5 U	97	%
trans-1,3-Dichloropropene		0.5 U	NA	0.5 U	104	%
Acetone		27	NA	2 U	121	%
2-Butanone		2 U	NA	2 U	96	%
Carbon Disulfide		2 U	NA	2 U	84	%
4-Methyl-2-pentanone		2 U	NA	2 U	103	%
2-Hexanone		2 U	NA	2 U	104	%

* = Outside of EPA CLP QC limits.

PRELIMINARY REPORT

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B123, RM 125 Sump

RFW Batch Number: 9802G393 Client: ICF Kaiser-98A1028 Work Order: 11830-001-001-9 Page: 1c

	Cust ID:	98A1028-001. 003	98A1028-001. 003	VBLKFM	VBLKFM BS
	RFW#:	001	001 DL	98GVT054-MB1	98GVT054-MB1
Trichlorotrifluoroethane		0.5 U	NA	0.5 U	0.5 U
Xylene (total)		0.5 U	NA	0.5 U	109 %
DIBROMOFLUOROMETHANE		99 %	98 %	110 %	113 %

*= Outside of EPA CLP QC limits.

PRELIMINARY DATA

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B123, Rm 125 Samp MK 3/10/98

Recra LabNet - Chicago

SEMIVOLATILES BY GC/MS, TCLP LEACHATE

RFW Batch Number: 9802G393 Client: ICF Kaiser-98A1028 Work Order: 11830-001-001-9 Report Date: 03/06/98 13:23 Page: 1a

	Cust ID:	98A1028-001.005	98A1028-001.005	SBLKIM	SBLKIM BS	SBLKIN
Sample Information	RFW#:	003	003 MS	98GB0062-MB1	98GB0062-MB1	98GB0062-TC1
	Matrix:	WATER	WATER	WATER	WATER	WATER
	D.F:	1	1	1	1	1
	Units:	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	2-Fluorophenol	67 %	62 %	71 %	71 %	68 %
	Phenol-d5	75 %	79 %	76 %	85 %	76 %
	Nitrobenzene-d5	87 %	90 %	90 %	98 %	84 %
	2-Fluorobiphenyl	94 %	99 %	93 %	104 %	87 %
	2,4,6-Tribromophenol	83 %	108 %	85 %	109 %	86 %
	p-Terphenyl-d14	88 %	85 %	82 %	87 %	83 %
Pyridine		70 U	70 %	7 U	77 %	70 U
1,4-Dichlorobenzene		50 U	81 %	5 U	74 %	50 U
o-Cresol		60 U	86 %	6 U	90 %	60 U
meta & para-Cresol		30 U	83 %	3 U	86 %	30 U
Hexachloroethane		70 U	82 %	7 U	75 %	70 U
Nitrobenzene		40 U	83 %	4 U	88 %	40 U
Hexachlorobutadiene		80 U	83 %	8 U	80 %	80 U
2,4,6-Trichlorophenol		30 U	82 %	3 U	87 %	30 U
2,4,5-Trichlorophenol		40 U	91 %	4 U	74 %	40 U
2,4-Dinitrotoluene		20 U	106 %	2 U	101 %	20 U
Hexachlorobenzene		30 U	98 %	3 U	101 %	30 U
Pentachlorophenol		60 U	87 %	6 U	89 %	60 U

*= Outside of EPA CLP QC limits.

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RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 03/12/98

CLIENT: ICF Kaiser-98A1028
WORK ORDER: 11830-001-001-9999-00

RECRA LOT #· 9802G393

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-004	98A1028-001.006	Silver, Total	0.15 u	UG/L	0.15
		Aluminum, Total	63.6	UG/L	6.6
		Arsenic, Total	0.80 u	UG/L	0.80
		Barium, Total	25.4	UG/L	0.10
		Beryllium, Total	0.10 u	UG/L	0.10
		Calcium, Total	15000	UG/L	3.8
		Cadmium, Total	0.20 u	UG/L	0.20
		Cobalt, Total	0.25 u	UG/L	0.25
		Chromium, Total	4.2	UG/L	0.20
		Copper, Total	12.0	UG/L	0.35
		Iron, Total	188	UG/L	8.4
		Mercury, Total	0.10 u	UG/L	0.10
		Potassium, Total	1070	UG/L	3.7
		Lithium, Total	4.8	UG/L	0.65
		Magnesium, Total	3480	UG/L	3.8
		Manganese, Total	3.3	UG/L	0 25
		Molybdenum, Total	23.2	UG/L	0.25
		Sodium, Total	8430	UG/L	88.5
		Nickel, Total	1.6	UG/L	0.30
		Lead, Total	55.9	UG/L	0.60
		Antimony, Total	0.87	UG/L	0.70
		Selenium, Total	0.90 u	UG/L	0 90
		Tin, Total	0.96	UG/L	0.85
		Strontium, Total	124	UG/L	0.10
		Thallium, Total	1.2 u	UG/L	1 2
		Vanadium, Total	0.30 u	UG/L	0.30
		Zinc, Total	27.8	UG/L	0.30

Thermo NUtech - Rocky Flats
Radscreen Results

RIN. 98A1028
Analysis: Radscreen
Report Date: 02/13/98

Distribution/Fax: APO/ 3400

Laboratory Sample ID	APO Sample ID			Matrix	Gross Alpha		Gross Beta		Total Activity	DOT
	RIN	Event	Bottle		pCi/L	2σ	pCi/L	2σ	pCi/ml	Class
98020150-01	98A1028	001	001	Water	24	57	12	84	0.18	NONRAD

DOT Classification <2000 pCi/ml total activity is NONRAD
>= 2000 pCi/ml total activity is RAD

Total Activity Calculated as the sum of the gross alpha and beta activities AND the measurement uncertainties for these two measurements. If the measured activity is negative, 0 pCi/L (instead of the negative value) is used to calculate the total activity.

Analysis Methods Sample Preparation Procedure: L-8278-A, "Sample Preparation for Radiological Screening by Gas Proportional Counting".
Counting Procedure: L-6295-A, "Operation of Tennelec LB4100 Gas Proportional Counters".

K M Hagglund Date 2/13/98
Technical Review

Donald R. Taylor Date 2/13/98
Quality Assurance Review

Thermo NUtech - Rocky Flats
[illegible]
[illegible]
[illegible]

RF-0001 (11/97)

WASTE CHARACTERISTICS REPORT

Case Narrative for Fingerprint Analysis

Lab Name: 559 Radioanalytical Laboratories	RF Sample ID:	98A1028-001.002
Lab Code: 559 RIL	Lab Sample ID:	98A1028-001 002
	RIN:	98A1028-001 002

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. This method has been approved by the APO on 6/19/1997.

Case Narrative:

On February 11, 1998 this sample was received in the 559 Laboratory.
All QC was within limits. There were no anomalies during analysis.

WASTE CHARACTERISTICS REPORTING FORM 1

Analysis Data Sheet for the Fingerprint Procedure

Lab Name: 559 Radioanalytical Laboratories
Lab Code: 559 RIL
Date of Analysis: Feb 12 1998

RF Sample ID: 98A1028-001 002
Lab Sample ID: 98A1028-001 002
RIN: 98A1028-001.002

Parameter ID	Parameter Name	Result	Qualifiers		Units
			C	Q	
	Physical Appearance	Single phase, non-viscous, transparent, colorless liquid.			N A
	Water Test	Positive			N A
10-29-7	pH	5			S. U.
	Specific Gravity	1.0075			*1
	Miscible with	Water			N A
	Reactivity with Water	No			N A
RFS-FP-97	Flash Point	NA, Aqueous Sample			degrees C
	Chlorinated Solvents	NA, Aqueous Sample			ppm

Notes:
NA - Not Applicable
*1 - relative to water @ 20 C

Approval: ______________

Peer Review ______________

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SAMPLERS (Signature/Emp No) Ck Angel / 573352 Jim Burkhardt / 584293

REPORT ID # 98A1028

Lab Location: 971 (1375-37) | 559 (0961-31) | 771 (0367-71) | 881 (058331) | Contractor Lab
MBA:

SAMPLE LOCATION
Bldg 123, Rm 125

KAISER-HILL ANALYTICAL LABORATORIES
CHAIN OF CUSTODY

Date	Time	Event #	Bottle #	Container # (If Required)	Cooled to 4°C	NaOH	HNO3	H2SO4	None	α/β Screen	Gross α/β	Total VOA	Total SVOA	ICPES	ICPES & Hg	TCLP VOA	TCLP SVOA	Metals - TCLP	Metals - TCLP & Hg	VOA Sweep	MetalScreen	Fingerprint	Cn	Iso	g/l	TOTAL METALS & Hg
2-11-98	1015	001	002						X													X				

2-11-98 CEH

Relinquished By / ORG	Date/Time		Received By / ORG	Date/Time	
CE Angel / ASI	2-11-98	1400	LB Johnson / Labs	2/11/98	1400
LB Johnson / Labs	2/11/98	1400	Trig 102-6 / Labs	2/11/98	1400
/			/		
/			/		
/			/		

LABORATORY USE ONLY	Y / N
PCKG REC'D/CUSTODY SEALS INTACT	N/A
SAMPLE LABELS/COCs AGREE	
TEMPERATURE AT TIME OF RECIEPT ___°C	N/A
CORRECTED COPY ATTACHED	

Charge # EM243411 Cost Center

Remarks PRIORITY 2

NMC Approval for movement of nonaccountable radioactive samples from an MAA TID/NMDTR is not required for movement of this material
NMC Transfer Approval

Appendix D - Analytical Results for the Underground Pipe to Tank D-853 in Building 428

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Rinsate sample from Tank 853 Building 428
Rinsate sample for underground portion of RCRA Unit 40 from B123 to B428
Sample # 98A097-001

Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	"Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
1 1 Dichloroethylene	0 5U	7 00E-03	7 ppb	NO	YES
1 1 2-Trichloroethane	0 5U	5 00E-03	5 ppb	NO	YES
1-1-1-Trichloroethane	0 5U	2 00E-01	200 ppb	NO	YES
1-2-Dichloroethane	0 5U	5 00E-03	5 ppb	NO	YES
2-Butanone (Methyl ethyl ketone)	2 U	2 47E+00	2470 ppb	NO	YES
Acetone	2U	3 65E+00	3650 ppb	NO	YES
Aluminum Al	271 Total	1 06E+02	106 000 ppb	NO	NO
Antimony Sb	2 2 Total	6 00E-03	6 ppb	NO	NO
Arsenic As	1 6 U Total	5 00E-02	50 ppb	NO	YES
Barium Ba	37 1 Total	2 00E+00	2 000 ppb	NO	YES
Benzene	0 5 U	5 00E-03	5 ppb	NO	YES
Beryllium, Be	0 2U Total	4 00E-03	4 ppb	NO	NO
Bromodichloromethane	5	1 00E-01	100 ppb	NO	NO
Cadmium Cd	0 40U Total	5 00E-03	5 ppb	NO	YES
Carbon disulfide	2 0 U	2 76E-02	27 6 ppb	NO	YES
Carbon tetrachloride	0 5U	5 00E-03	5 ppb	NO	YES
Chlorobenzene	0 5U	1 00E-01	100 ppb	NO	YES
Chloroform	41 E Background Contaminant	1 00E-01	100 ppb	NO	YES
Chromium, Cr	588 Total	1 00E-01	100 ppb	YES	YES
Cobalt Co	0 5 U Total	2 19E+00	2,190 ppb	NO	NO
Copper, Cu	19 8 Total	1 30E+00	1 300 ppb	NO	NO
Ethylbenzene	0 5U	7 00E-01	700 ppb	NO	YES

Rinsate sample for underground RCRA Unit 40 Waste Process Lines
Underground Line running from B123 to B428
Sample from T853 outlet
Summarized Tuesday March 24 1998
Ted A Hopkins

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Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	"Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
Iron, Fe	3310	NA, not on Tier 2 Table	NA	NO	NO
Lead, Pb	21 7	Not found in RFCA Tier 2 Table DRAFT Standard 15 ppb	15 ppb	YES 15 ppb.	YES
Lithium Li	3 1 Total	7 30E+01	73,000 ppb	NO	NO
Magnesium Mg	3200 Total	Not found in RFCA Tier 2 Table	NA	NO	NO
Manganese Mn	26	1 83E-01	183 ppb	NO	NO
Mercury Hg	1 3 Total	2 00E-03	2 ppb	NO	YES
Methylene chloride	0 5U	5 00E-03	5 ppb	NO	YES
Molybdenum Mo	51 1 Total	1 83E-01	183 ppb	NO	NO
Nickel Ni	64 Total	1 00E-01	100 ppb	NO	NO
Potassium K	1 140 Total	Not found in the RFCA Tier 2 Table	NA	NO	NO
Pyridine	70 U	Not on Tier 2 List	NA	NA not on Tier 2 list	YES
Selenium, Se	1 8 U Total	5 00E-02	50 ppb	NO	YES
Silver Ag	10 0 U Total	1 83E-01	183 ppb	NO	YES
Sodium	50 300 Total	Not found in RFCA Tier 2 Table	NA	NO	NO
Strontium, Sr	111	2 19E+01	21 900 ppb	NO	NO
Tetrachloroethylene	0 5 U	5 00E-03	5 ppb	NO	YES
Thallium Tl	2 3 U Total	2 00E-03	2 ppb	NO	NO
Tin, Sn	14 6 Total	2 19E+01	21,900 ppb	NO	NO
Toluene	0 5U	1 00E+00	1000 ppb	NO	YES
Trichloroethylene	0 5U	5 00E-03	5 ppb	NO	YES
Vanadium, V	2 5	2 56E-01	256 ppb	NO	NO
Vinyl chloride	0 5U	2 00E-03	2 ppb	NO	YES
Xylenes	0 5U	1 00E+01	10,000 ppb	NO	YES
Zinc, Zn	25 2 Total	1 10E+01	11,000 ppb	NO	NO

Rinsate sample for underground RCRA Unit 40 Waste Process Lines
Underground Line running from B123 to B428
Sample from T553 outlet
Summarized Tuesday March 24 1998
Ted A Hopkins

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APO SAMPLE RECEIPT

his sample receipt is supplied to waste generators as notification of sample llection Inquiries into the status of this sample may be directed to the alytical Projects Office (APO) by calling 966-2403, 966-7789, or 966-3771 e APO references samples by the following identification numbers

RIN	**98A0997**	Waste Stream ID	428-0-0
APO Event	98A0997-001	Customer Sample ID	TANK D853
plicate ID		Field Blank ID	
Issue Date	02/03/98	Equipment Blank ID	
		Trip Blank ID	

mple Description FINAL RINSATE BLDG 428
Other Id
Sample Location BLDG 428, TANK 853, UNDERGROUND

alyses Requested:	Bottle ID
UEOUS RADSCREEN - DOT	98A0997-001 001
OSS ALPHA/BETA - NO RAD ADDED (WASTE)	98A0997-001 001
NGERPRINT (559)	98A0997-001 002
-846 8260 (Water, Aqueous Waste)	98A0997-001 003
-846 8260 (Water, Aqueous Waste)	98A0997-001 004
-846 8270B (TCLP Extracts)	98A0997-001 005
TAL METALS SW-846 (HG)	98A0997-001 006

Date Sampled		Phone	Pager
Process Contact	**M. AYCOCK**	5309	7508
ternate Contact	**P. VALENTINELLI**	6047	

turning Excess Sample Material

nodified sample material remaining after analysis is generally returned to e generator The generator must be prepared to receive and dispose of cess sample material for applicable state and federal regulations gulatory exclusions for returning excess sample material are specified in the de of Colorado Regulations (CCR) 1007-3, Part 261 4(d) 'Samples' If oblems with the disposal of excess sample material are encountered, the vironmental Coordinator for the generation area should be contacted for solution of the issues Only sample material which has not been modified ring analysis will be returned Material which has been acidified for eservation purposed will not be returned

NTER-DEPARTMENT DELIVERY:

eliver To
Building Organization

te 02/03/98 Page 4

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Thermo NUtech - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80402
(303)966-6860

RIN: 98A0997
Report Date: 02/25/98

Sample and Duplicate Analysis Results

		Gross Alpha			Gross Beta				
Customer Sample ID	Lab Sample ID	Activity	Unc (2s)	MDA	Activity	Unc. (2s)	MDA	Units	QC Batch
98A0997-001 001	98020070-01	1 4	0 8	1 8	2.2	1 0	2.3	pCi/l	98AB026

Preparation Blank Results

		Gross Alpha			Gross Beta			
QC Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units
98AB026	98020069-09	-0.1	0 5	1 2	0 6	0.9	2.2	pCi/l

LCS Results

		Gross Alpha			Gross Beta				
QC Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	SRM
98AB026	98020069-10	24 4	3.5	5.1	24 8	3 7	6.9	pCi/l	8AB_CTRL10

Associated Duplicate Analysis Results

		Gross Alpha			Gross Beta				
Customer Sample ID	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	QC Batch
98A0998-004 019	98020069-04	0 9	0.4	1 4	1 3	0.7	2.2	pCi/l	98AB026
98A0998-004 019	98020069-08 D	0.7	0.6	1 4	0 5	1 0	2.2	pCi/l	98AB026

0009

Thermo NUtech - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80402
(303) 966-6860

RIN: 98A0997
Report Date: 02/25/98

Method Summary

Gross alpha and gross beta activities are measured by evaporating an aliquot of the prepared sample onto a counting planchet and counting the alpha and beta activities in a low background, thin-windowed, gas flow proportional counter Organics or combustible solids are ashed, the residue dissolved in acid, and the solution or an aliquot of the solution is evaporated onto a counting planchet. Aqueous samples are concentrated and then evaporated onto a counting planchet. Analysis of aqueous samples and prepared non-aqueous samples is described in detail in Rocky Flats Procedure, L-6240, *"Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples"* Preparation of oils, solvents and other combustible organics is described in L-6194, *"Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity"* The counting procedure is described in procedure L-6295, *"Operation of the Tennelec LB4100 Gas Proportional Counters"*

The detector counting efficiency and self-absorption effects of the salt residue on the planchet are determined from calibration curves which are generated by counting several planchets prepared with a known amount of alpha or beta activity and increasing amounts of salt (0 to 100 mg) Americium-241 is used as the spike for the alpha curves and a solution of Sr-90, Y-90 is used for the beta curves. These standards are prepared from certified reference material which is traceable to the National Institute of Standards Technology (NIST).

The theoretical minimum detectable activity (MDA) for the analysis is based on the detector background, detector efficiency and self-absorption effects, count time and quantity of sample analyzed. The MDA for each analysis is calculated and is also reported If the reported result is based on the average of two or more counts, the average MDA is reported.

Quality Control Summary

A sample batch consists of eleven or fewer samples, a duplicate of one of the samples, an alpha and a beta laboratory control sample, and a preparation blank Each set of samples forms a "QC Batch" and is assigned a QC batch number A sample can be traced back to its corresponding quality control samples through the QC Batch number The preparation blank (PB), an aliquot of deionized, distilled water, is prepared and analyzed with the samples to confirm that the samples were not contaminated during the analysis. The activities reported for samples and standards were not corrected for preparation blank activity. The alpha and beta laboratory control samples are aqueous standards of ^{241}Am and ^{90}Sr, respectively The SRM standards used to prepared these standards are traceable to NIST The duplicate, designated as the sample ID followed by a "D", is a second aliquot of one of the samples in the QC Batch which is carried through the procedure as a separate sample.

The instrument QC includes determining instrument backgrounds weekly and counting an instrument check source daily on the Tennelec LB4100 multidetector gas proportional counters. The instrument backgrounds are based on the average of at least five, and normally ten or more, 4 hour counts. The instrument check sources are counted daily to verify that the efficiencies of the detectors have not changed A summary of the instrument backgrounds is included in the instrument raw data section of this report. The daily check source information is available in the supporting documentation package.

Narrative

This sample was submitted for radscreen analysis and analysis of gross alpha/gross beta activity for No-Rad-Added assessment. The radscreen analyses were done according to procedure L-6278, *"Sample Preparation for Radiological Screening by Gas Proportional Counting"* in QC batch 98RS038. The gross alpha/gross beta analyses were done using procedure L-6240, *"Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples"* incorporating the quality control requirements of procedure L 6194, *"Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity"* in order to comply with the No-Rad-Added program quality requirements. The gross alpha/gross beta analyses were done in QC batch 98AB026 This batch also included samples from RIN 98A0996 The lab duplicate for the batch was done using sample 98020069-04 from 98A0996 This report contains copies of documents which are common to both reports The originals are included in report 98A0996. There were no problems noted with the analysis of this sample and all QC data for the batch are acceptable.

0007

Recra LabNet - Chicago — Tank 853
METHOD 8260 VOLATILES — Report Date: 02/24/98 14:11

RFW Batch Number 9802G376 — Client: ICF Kaiser-98A0997 — Work Order: 11830-001-001-9 — Page: 1a

Tank D853

Sample Information	Cust ID:	98A0997-001.003	98A0997-001.003	VBLKDA	VBLKDA BS	VBLKAX	VBLKAX BS
	RFW#:	001	001 DL	98GVF055-MB1	98GVF055-MB1	98GVF056-MB1	98GVF056-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1	5	1	1	1	1
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	4-Bromofluorobenzene	107 %	104 %	104 %	103 %	107 %	99 %
	Toluene-d8	108 %	104 %	107 %	101 %	112 %	106 %
	1,2-Dichloroethane-d4	107 %	106 %	98 %	98 %	101 %	103 %
Dichlorodifluoromethane		0.5 U	NA	0.5 U	58 %	0.5 U	72 %
Chloromethane		0.5 U	NA	0.5 U	101 %	0.5 U	102 %
Vinyl chloride		0.5 U	NA	0.5 U	96 %	0.5 U	91 %
Bromomethane		0.5 U	NA	0.5 U	74 %	0.5 U	69 %
Chloroethane		0.5 U	NA	0.5 U	99 %	0.5 U	102 %
Trichlorofluoromethane		0.5 U	NA	0.5 U	61 %	0.5 U	60 * %
1,1-Dichloroethene		0.5 U	NA	0.5 U	72 %	0.5 U	87 %
Methylene Chloride		0.5 U	NA	0.5 U	75 %	0.5 U	82 %
trans-1,2-Dichloroethene		0.5 U	NA	0.5 U	80 %	0.5 U	85 %
1,1-Dichloroethane		0.5 U	NA	0.5 U	82 %	0.5 U	83 %
2,2-Dichloropropane		0.5 U	NA	0.5 U	91 %	0.5 U	95 %
cis-1,2-Dichloroethene		0.5 U	NA	0.5 U	92 %	0.5 U	97 %
Bromochloromethane		0.5 U	NA	0.5 U	94 %	0.5 U	94 %
Chloroform		E 41		0.5 U	85 %	0.5 U	85 %
1,1,1-Trichloroethane		0.5 U	NA	0.5 U	78 %	0.5 U	82 %
1,1-Dichloropropene		0.5 U	NA	0.5 U	86 %	0.5 U	91 %
Carbon Tetrachloride		0.5 U	NA	0.5 U	74 * %	0.5 U	79 %
Benzene		0.5 U	NA	0.5 U	85 %	0.5 U	90 %
1,2-Dichloroethane		0.5 U	NA	0.5 U	81 %	0.5 U	84 %
Trichloroethene		0.5 U	NA	0.5 U	85 %	0.5 U	88 %
1,2-Dichloropropane		0.5 U	NA	0.5 U	92 %	0.5 U	95 %
Dibromomethane		0.5 U	NA	0.5 U	90 %	0.5 U	95 %
Bromodichloromethane		5	NA	0.5 U	84 %	0.5 U	86 %
Toluene		0.5 U	NA	0.5 U	87 %	0.5 U	90 %
1,1,2-Trichloroethane		0.5 U	NA	0.5 U	91 %	0.5 U	91 %
Tetrachloroethene		0.5 U	NA	0.5 U	85 %	0.5 U	82 %

* = Outside of EPA CLP QC limits.

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RFW Batch Number. 98026376 Client: ICF Kaiser-98A0997-T853 Work Order. 11830-001-001-9 Page. 1b

Cust ID.	98A0997-001.003		98A0997-001.003	VBLKDA		VBLKDA BS		VBLKAX		VBLKAX BS	
RFW#	001		001 DL	98GVF055-MB1		98GVF055-MB1		98GVF056-MB1		98GVF056-MB1	
1,3-Dichloropropane	0.5	U	NA	0.5	U	96	%	0.5	U	93	%
Dibromochloromethane	0.5	U	NA	0.5	U	88	%	0.5	U	85	%
1,2-Dibromoethane	0.5	U	NA	0.5	U	93	%	0.5	U	96	%
Chlorobenzene	0.5	U	NA	0.5	U	89	%	0.5	U	88	%
1,1,1,2-Tetrachloroethane	0.5	U	NA	0.5	U	86	%	0.5	U	85	%
Ethylbenzene	0.5	U	NA	0.5	U	87	%	0.5	U	84	%
Styrene	0.5	U	NA	0.5	U	92	%	0.5	U	88	%
Bromoform	0.5	U	NA	0.5	U	92	%	0.5	U	90	%
Isopropylbenzene	0.5	U	NA	0.5	U	84	%	0.5	U	84	%
Bromobenzene	0.5	U	NA	0.5	U	89	%	0.5	U	88	%
1,1,2,2-Tetrachloroethane	0.5	U	NA	0.5	U	94	%	0.5	U	94	%
1,2,3-Trichloropropane	0.5	U	NA	0.5	U	92	%	0.5	U	91	%
n-Propylbenzene	0.5	U	NA	0.5	U	90	%	0.5	U	86	%
2-Chlorotoluene	0.5	U	NA	0.5	U	92	%	0.5	U	92	%
4-Chlorotoluene	0.5	U	NA	0.5	U	88	%	0.5	U	88	%
1,3,5-Trimethylbenzene	0.5	U	NA	0.5	U	85	%	0.5	U	81	%
tert-Butylbenzene	0.5	U	NA	0.5	U	87	%	0.5	U	85	%
1,2,4-Trimethylbenzene	0.5	U	NA	0.5	U	87	%	0.5	U	84	%
sec-Butylbenzene	0.5	U	NA	0.5	U	86	%	0.5	U	83	%
1,3-Dichlorobenzene	0.5	U	NA	0.5	U	93	%	0.5	U	91	%
p-Isopropyltoluene	0.5	U	NA	0.5	U	84	%	0.5	U	81	%
1,4-Dichlorobenzene	0.5	U	NA	0.5	U	96	%	0.5	U	95	%
1,2-Dichlorobenzene	0.5	U	NA	0.5	U	89	%	0.5	U	89	%
n-Butylbenzene	0.5	U	NA	0.5	U	89	%	0.5	U	86	%
1,2-Dibromo-3-chloropropane	0.5	U	NA	0.5	U	100	%	0.5	U	100	%
1,2,4-Trichlorobenzene	0.5	U	NA	0.5	U	96	%	0.5	U	97	%
Hexachlorobutadiene	0.5	U	NA	0.5	U	85	%	0.5	U	82	%
Naphthalene	0.5	U	NA	0.5	U	101	%	0.5	U	103	%
1,2,3-Trichlorobenzene	0.5	U	NA	0.5	U	92	%	0.5	U	96	%
cis-1,3-Dichloropropene	0.5	U	NA	0.5	U	83	%	0.5	U	84	%
trans-1,3-Dichloropropene	0.5	U	NA	0.5	U	89	%	0.5	U	93	%
Acetone	2	U	NA	2	U	108	%	2	U	2.0	U
2-Butanone	2	U	NA	2	U	128	%	2	U	2.0	U
Carbon Disulfide	2	U	NA	2	U	65	%	2	U	2.0	U
4-Methyl-2-pentanone	2	U	NA	2	U	113	%	2	U	2.0	U
2-Hexanone	2	U	NA	2	U	124	%	2	U	2.0	U

*= Outside of EPA CLP QC limits

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RFW Batch Number: 9802G376 Client: ICF Kaiser-98A0997 T853 Work Order: 11830-001-001-9 Page: 1c

	Cust ID:	98A0997-001. 003	98A0997-001. 003	VBLKDA	VBLKDA BS	VBLKAX	VBLKAX BS
	RFW#:	001	001 DL	98GVF055-MB1	98GVF055-MB1	98GVF056-MB1	98GVF056-MB1
Trichlorotrifluoroethane		2 U	NA	2 U	2 U	2 U	2 U
Xylene (total)		0.5 U	NA	0.5 U	92 %	0.5 U	88 %

* = Outside of EPA CLP QC limits.

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Recra LabNet - Chicago

SEMIVOLATILES BY GC/MS, TCLP LEACHATE

RFW Batch Number: 98026376 Client: ICF Kaiser-98A0997 T853 Work Order: 11830-001-001-9 Report Date: 02/25/98 13:50 Page: 1a

Tank D853

Sample Information		Cust ID.	98A0997-001. 005	SBLKHX	SBLKHX BS	SBLKHY	SBLKHZ	SBLKIA
		RFW#.	004	98GB0056-MB1	98GB0056-MB1	98GB0056-TC1	98GB0056-TC2	98GB0056-TC3
		Matrix.	WATER	WATER	WATER	WATER	WATER	WATER
		D.F.:	1	1	1	1	1	1
		Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Surrogate Recovery	2-Fluorophenol		61 %	60 %	85 %	70 %	68 %	76 %
	Phenol-d5		66 %	64 %	99 * %	75 %	74 %	82 %
	Nitrobenzene-d5		80 %	72 %	100 %	86 %	77 %	88 %
	2-Fluorobiphenyl		79 %	68 %	96 %	86 %	76 %	89 %
	2,4,6-Tribromophenol		55 %	51 %	71 %	56 %	60 %	66 %
	p-Terphenyl-d14		104 %	84 %	104 %	102 %	97 %	102 %
Pyridine			70 U	7 U	56 %	70 U	70 U	70 U
1,4-Dichlorobenzene			50 U	5 U	77 %	50 U	50 U	50 U
o-Cresol			60 U	6 U	89 %	60 U	60 U	60 U
meta & para-Cresol			30 U	3 U	90 %	30 U	30 U	30 U
Hexachloroethane			70 U	7 U	86 %	70 U	70 U	70 U
Nitrobenzene			40 U	4 U	95 %	40 U	40 U	40 U
Hexachlorobutadiene			80 U	8 U	67 %	80 U	80 U	80 U
2,4,6-Trichlorophenol			30 U	3 U	88 %	30 U	30 U	30 U
2,4,5-Trichlorophenol			40 U	4 U	89 %	40 U	40 U	40 U
2,4-Dinitrotoluene			20 U	2 U	106 %	20 U	20 U	20 U
Hexachlorobenzene			30 U	3 U	74 %	30 U	30 U	30 U
Pentachlorophenol			60 U	6 U	85 %	60 U	60 U	60 U

*= Outside of EPA CLP QC limits.

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02 13

RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 02/25/98

CLIENT: ICF Kaiser-98A0997 — T853
WORK ORDER: 11830-001-001-9999-00

RECRA LOT #: 9802G376

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-003	98A0997-001.006 Tank D853	Silver, Total	10.0 u	UG/L	10.0
		Aluminum, Total	271	UG/L	13.1
		Arsenic, Total	1.6 u	UG/L	1.6
		Barium, Total	37.1	UG/L	0 20
		Beryllium, Total	0.20 u	UG/L	0.20
		Calcium, Total	13100	UG/L	7.6
		Cadmium, Total	0.40 u	UG/L	0.40
		Cobalt, Total	0.50 u	UG/L	0.50
		Chromium, Total	588	UG/L	0.40
		Copper, Total	19.8	UG/L	0.70
		Iron, Total	3310	UG/L	16 9
		Mercury, Total	1.3	UG/L	0.10
		Potassium, Total	1140	UG/L	7.4
		Lithium, Total	3 1	UG/L	1 3
		Magnesium, Total	3200	UG/L	7 6
		Manganese, Total	26.0	UG/L	0 50
		Molybdenum, Total	51.1	UG/L	0.50
		Sodium, Total	50300	UG/L	177
		Nickel, Total	64.0	UG/L	0.60
		Lead, Total	21.7	UG/L	1.2
		Antimony, Total	2.2	UG/L	1.4
		Selenium, Total	1.8 u	UG/L	1 8
		Tin, Total	14.6	UG/L	1 7
		Strontium, Total	111	UG/L	0.20
		Thallium, Total	2.3 u	UG/L	2.3
		Vanadium, Total	2.5	UG/L	0 60
		Zinc, Total	25.2	UG/L	0.60

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WASTE CHARACTERISTICS REPORT

Case Narrative for Fingerprint Analysis

Lab Name: 559 Radioanalytical Laboratories	RF Sample ID:	98A0997-001.002
Lab Code: 559 RIL	Lab Sample ID:	98A0997-001.002
	RIN:	98A0997-001.002

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module 5508-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261 21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. This method has been approved by the APO on 6/19/1997.

Case Narrative:

On February 9, 1998 this rinsate sample was received in the 559 Laboratory. All QC was within limits. There were no anomalies during analysis

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WASTE CHARACTERISTICS REPORTING FORM 1

Analysis Data Sheet for the Fingerprint Procedure

Lab Name: 559 Radioanalytical Laboratories		RF Sample ID:	98A0997-001.002
Lab Code: 559 RIL		Lab Sample ID:	98A0997-001.002
Date of Analysis: Feb 10 1998		RIN:	98A0997-001.002

Parameter ID	Parameter Name	Result	Qualifiers C	Qualifiers Q	Units
	Physical Appearance	Single phase, transparent, colorless, non-viscous liquid.			N A
	Water Test	Positive			N A
10-29-7	pH	9			S. U.
	Specific Gravity	1.0057			*1
	Miscible with	Water			N A
	Reactivity with Water	No			N A
RFS-FP-97	Flash Point	NA, Aqueous Sample			degrees C
	Chlorinated Solvents	NA, Aqueous Sample			ppm

Notes:
NA - Not Applicable
*1 - relative to water @ 20 C

Approval: [signature]

Peer Review: [signature]

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Rinsate from aboveground/underground piping

Recra LabNet - Chicago
METHOD 8260 VOLATILES

Report Date 01/02/98 10.41

RFW Batch Number: 9712G669 Client: ICF Kaiser-98A0647 Work Order 11830-001-001-9 Page 1a

Sample Information	Cust ID:	98A0647-001. 005	VBLKEI	VBLKEI BS
	RFW#:	002	97GVT491-MB1	97GVT491-MB1
	Matrix:	WATER	WATER	WATER
	DF:	1	1	1
	Units	UG/L	UG/L	UG/L
Surrogate Recovery	4-Bromofluorobenzene	93 %	85 %	87 %
	Toluene-d8	103 %	94 %	96 %
	1,2-Dichloroethane-d4	104 %	89 %	93 %
Dichlorodifluoromethane		0.5 U	0.5 U	95 %
Chloromethane		0.5 U	0.5 U	93 %
Vinyl chloride		0.5 U	0.5 U	98 %
Bromomethane		0.5 U	0.5 U	74 %
Chloroethane		0.5 U	0.5 U	93 %
Trichlorofluoromethane		0.5 U	0.5 U	82 %
1,1-Dichloroethene		0.5 U	0.5 U	92 %
Methylene Chloride		0.5 U	0.5 U	82 %
trans-1,2-Dichloroethene		0.5 U	0.5 U	86 %
1,1-Dichloroethane		0.5 U	0.5 U	89 %
2,2-Dichloropropane		0.5 U	0.5 U	312 * %
cis-1,2-Dichloroethene		0.5 U	0.5 U	84 %
Bromochloromethane		0.5 U	0.5 U	64 * %
Chloroform		21	0.5 U	85 %
1,1,1-Trichloroethane		0.5 U	0.5 U	93 %
1,1-Dichloropropene		0.5 U	0.5 U	93 %
Carbon Tetrachloride		0.5 U	0.5 U	97 %
Benzene		0.5 U	0.5 U	90 %
1,2-Dichloroethane		0.5 U	0.5 U	88 %
Trichloroethene		0.5 U	0.5 U	90 %
1,2-Dichloropropane		0.5 U	0.5 U	93 %
Dibromomethane		0.5 U	0.5 U	83 %
Bromodichloromethane		2	0.5 U	87 %
Toluene		0.5 U	0.5 U	87 %
1,1,2-Trichloroethane		0.5 U	0.5 U	76 %
Tetrachloroethene		0.5 U	0.5 U	96 %

*= Outside of EPA CLP QC limits.

Purpose of sampling: Demonstrate liquid in piping is not RCRA hazardous waste

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RFW Batch Number: 9712G669 Client: ICF Kaiser-98A0647 Work Order: I1830-001-001-9 Page: 1b

	Cust ID: 98A0647-001. 005		VBLKEI		VBLKEI BS		
	RFW#. 002		97GVT491-MB1		97GVT491-MB1		
1,3-Dichloropropane	0.5	U	0.5	U	91		%
Dibromochloromethane	0.5	U	0.5	U	84		%
1,2-Dibromoethane	0.5	U	0.5	U	81		%
Chlorobenzene	0.5	U	0.5	U	89		%
1,1,1,2-Tetrachloroethane	0.5	U	0.5	U	88		%
Ethylbenzene	0.5	U	0.5	U	90		%
Styrene	0.5	U	0.5	U	88		%
Bromoform	0.5	U	0.5	U	89		%
Isopropylbenzene	0.5	U	0.5	U	88		%
Bromobenzene	0.5	U	0.5	U	84		%
1,1,2,2-Tetrachloroethane	0.5	U	0.5	U	84		%
1,2,3-Trichloropropane	0.5	U	0.5	U	76		%
n-Propylbenzene	0.5	U	0.5	U	91		%
2-Chlorotoluene	0.5	U	0.5	U	87		%
4-Chlorotoluene	0.5	U	0.5	U	86		%
1,3,5-Trimethylbenzene	0.5	U	0.5	U	82		%
tert-Butylbenzene	0.5	U	0.5	U	88		%
1,2,4-Trimethylbenzene	0.5	U	0.5	U	79		%
sec-Butylbenzene	0.5	U	0.5	U	89		%
1,3-Dichlorobenzene	0.5	U	0.5	U	87		%
p-Isopropyltoluene	0.5	U	0.5	U	86		%
1,4-Dichlorobenzene	0.5	U	0.5	U	87		%
1,2-Dichlorobenzene	0.5	U	0.5	U	84		%
n-Butylbenzene	0.5	U	0.5	U	92		%
1,2-Dibromo-3-chloropropane	0.5	U	0.5	U	81		%
1,2,4-Trichlorobenzene	0.5	U	0.5	U	74		%
Hexachlorobutadiene	0.5	U	0.5	U	79		%
Naphthalene	0.5	U	0.5	U	60	*	%
1,2,3-Trichlorobenzene	0.5	U	0.5	U	74		%
cis-1,3-Dichloropropene	0.5	U	0.5	U	88		%
trans-1,3-Dichloropropene	0.5	U	0.5	U	115		%
Acetone	18		2	U	46		%
2-Butanone	15		2	U	60		%
Carbon Disulfide	2	U	2	U	68		%
4-Methyl-2-pentanone	2	U	2	U	70	*	%
2-Hexanone	2	U	2	U	81		%

*= Outside of EPA CLP QC limits.

Cust ID:	98A0647-001. 005	VBLKEI	VBLKEI BS
RFW#:	002	97GVT491-MB1	97GVT491-MB1
Trichlorotrifluoroethane	2 U	2 U	2 U
Xylene (total)	0.5 U	0.5 U	94 %

*= Outside of EPA CLP QC limits

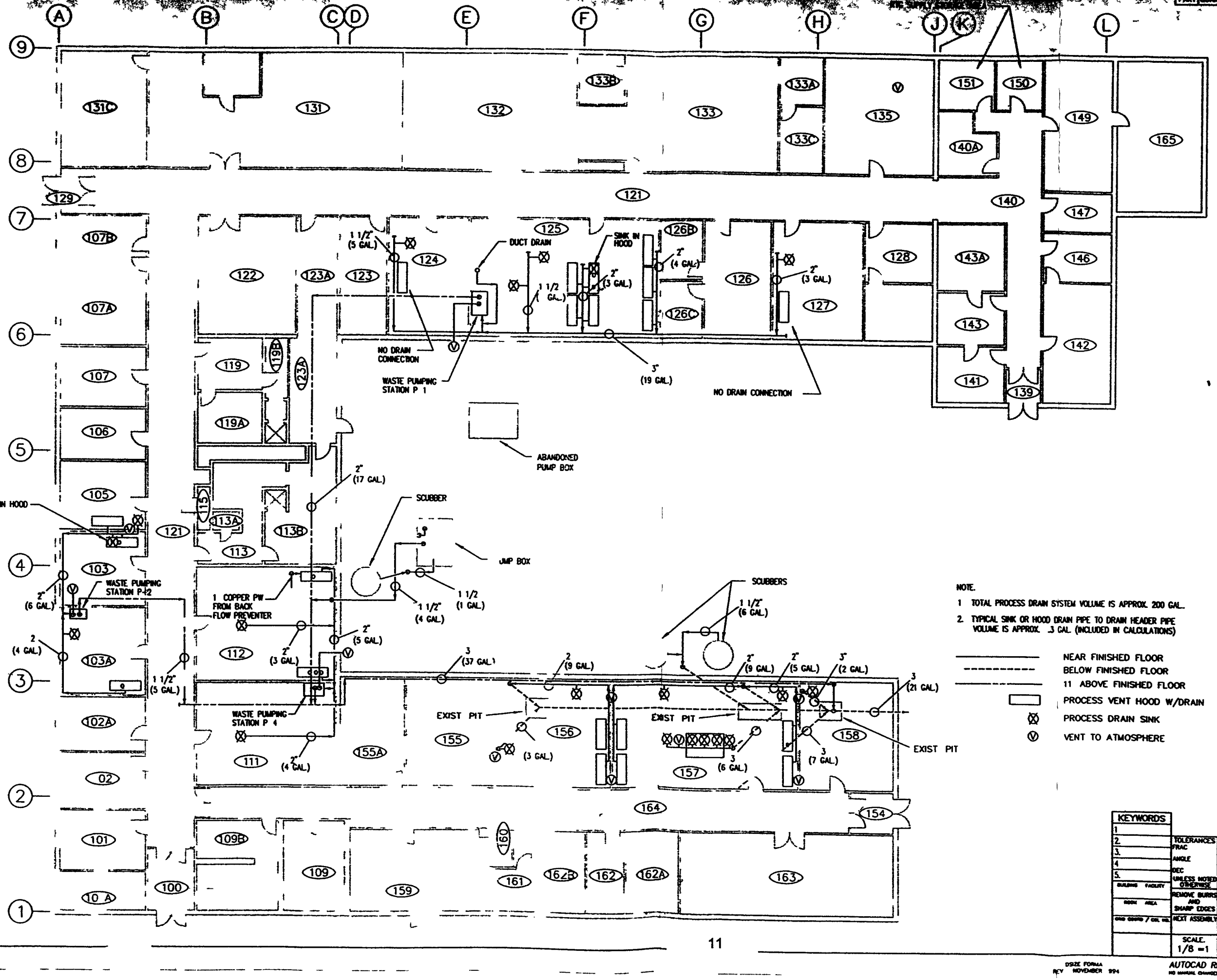
THIS REPORT IS PRELIMINARY; IT MAY CONTAIN UNREVIEWED DATA
RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 01/02/98

CLIENT: ICF Kaiser-98A0647
WORK ORDER: 11830-001-001-9999 00

RECRA LOT #: 9712G669

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT
-001	98A0647-001.004	Silver, Total	2.3		UG/L	0.70
		Aluminum, Total	963		UG/L	24 4
		Arsenic, Total	2.1	u	UG/L	2 1
		Barium, Total	36.6		UG/L	0.40
		Beryllium, Total	0.30	u	UG/L	0.30
		Calcium, Total	16800		UG/L	7.6
		Cadmium, Total	1.1		UG/L	0.30
		Cobalt, Total	144		UG/L	0 80
		Copper, Total	299		UG/L	1.3
		Iron, Total	26100		UG/L	11 3
		Potassium, Total	5250		UG/L	23.8
		Magnesium, Total	3040		UG/L	9 0
		Manganese, Total	2250		UG/L	0.40
		Molybdenum, Total	25.2		UG/L	0 60
		Sodium, Total	22400		UG/L	189
		Lead, Total	14.1		UG/L	1 3
		Antimony, Total	3.7		UG/L	1 3
		Selenium, Total	2.0	u	UG/L	2.0
		Tin, Total	5.4		UG/L	2.4
		Strontium, Total	91.9		UG/L	0 40
		Thallium, Total	1.9	u	UG/L	1 9
		Vanadium, Total	5.1		UG/L	0.80
		Zinc, Total	330		UG/L	0 90



NOTE.

1. TOTAL PROCESS DRAIN SYSTEM VOLUME IS APPROX. 200 GAL.
2. TYPICAL SINK OR HOOD DRAIN PIPE TO DRAIN HEADER PIPE VOLUME IS APPROX. .3 GAL (INCLUDED IN CALCULATIONS)

NEAR FINISHED FLOOR
BELOW FINISHED FLOOR
11 ABOVE FINISHED FLOOR
PROCESS VENT HOOD W/DRAIN
PROCESS DRAIN SINK
VENT TO ATMOSPHERE

KEYWORDS
1
2.
3.
4
5.
BUILDING FACILITY
ROOM AREA
GRID COORD / COL SEC

TOLERANCES
FRAC
ANGLE
DEC
UNLESS NOTED OTHERWISE
REMOVE BURRS AND SHARP EDGES
NEXT ASSEMBLY

SCALE. 1/8 =1

	B	D TE
DESIGNED		
DRAWN		11/25/97
CHECKED		
APPROVED		
SUBMITTED		
APPV REP		
APPV DOE		

U S DEPARTMENT OF
Rocky Flats Environmental T
GOLDEN, COLORADO

BUILDING

SIZE D | DRAWING NUMBER SK-001

D SIZE FORMA
REV NOVEMBER 994

AUTOCAD REL 12 GENERATED
NO MANUAL CHANGES ALLOWED

ACAD ARCHIVE

PLOTTED SCALE
DRAFTING CHECK
ACAD ARCHIVE
\ 70299\SK-001 Wed Nov 26 13:18:05 1997

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